

Service Manual

QUARTZ Synthesizer
LW/MW/FM Stereo Tuner

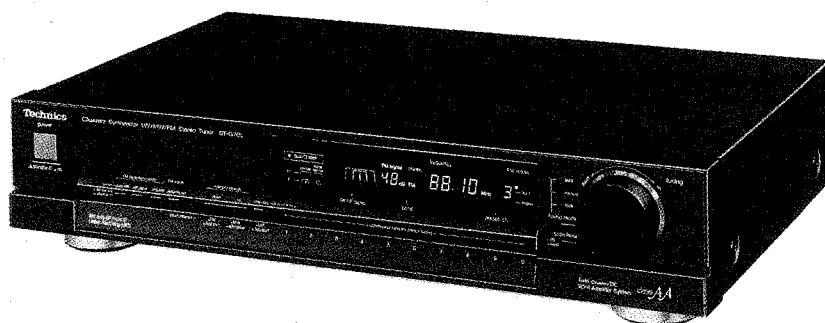
Tuner
ST-G70L

Color

(K)...Black Type
(S)...Silver Type

Area

Color	Area
(K) (S)	(EK) United Kingdom.
(K) (S)	(EB) Belgium.
(K) (S)	(EF) France.
(K) (S)	(EW) Switzerland.



SPECIFICATIONS

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz 87.525~108.00 MHz (+25 kHz shift)
Sensitivity	1.5 μV (IHF, usable)
S/N 30dB	1.3 μV (75Ω)
S/N 26dB	1.2 μV (75Ω)
S/N 20dB	0.9 μV (75Ω)
IHF 46dB stereo quieting sensitivity	28 μV/75Ω
Total harmonic distortion	
MONO (normal)	0.015%
STEREO (normal)	0.02%
S/N	
MONO	72dB (80dB, IHF)
STEREO	66dB (73dB, IHF)
Frequency response	4 Hz~18 kHz, +0.5dB~-1.5dB
Alternate channel selectivity	
normal ±400 kHz	55dB
super narrow ±200 kHz	30dB
Capture ratio	1.0dB
Image rejection at 98 MHz	130dB
IF rejection at 98 MHz	130dB
Spurious response rejection at 98 MHz	130dB
AM suppression	55dB
Stereo separation	
1 kHz	60dB
10 kHz	45dB

Carrier leak	
19 kHz	-55dB (-60dB, IHF)
38 kHz	-40dB (-45dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.0dB
Limiting point	0.85 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	
MW	522 kHz~1611 kHz (9 kHz-steps) 530 kHz~1620 kHz (10 kHz-steps)
LW	155 kHz~353 kHz (9 kHz-steps) 153 kHz~351 kHz (-2 kHz shift)
Sensitivity (S/N 20dB)	
MW	20 μV, 300 μV/m
LW	50 μV
Selectivity (±9 kHz)	
MW (at 999 kHz)	50dB
LW (at 254 kHz)	50dB

Technics

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

Image rejection	
MW (at 999kHz)	40dB
LW (at 254kHz)	40dB
IF rejection	
MW (at 999kHz)	60dB
LW (at 254kHz)	35dB

■ GENERAL

Output voltage	0.3V (0.6V IHF)
Power consumption	9.5W
Power supply	
For United Kingdom	AC 50Hz/60Hz, 240V
For continental Europe	AC 50Hz/60Hz, 220V

Dimensions (W × H × D)	430 × 93.5 × 288 mm (16-30/32" × 3-22/32" × 11-11/32")
Weight	3.5 kg (7.7 lb.)

Notes:

1. Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).
2. Specifications are subject to change without notice. Weight and dimensions are approximate.

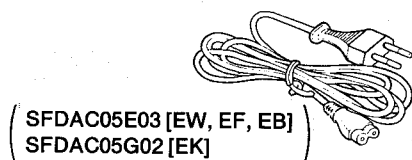
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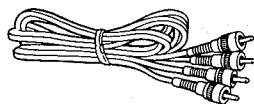
■ ACCESSORIES

- AC power supply cord..... 1



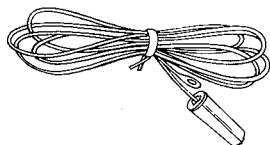
- Stereo connection cable

(SJP2249-1)



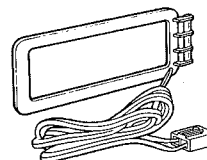
- FM indoor antenna..... 1

(SSA270M)



- AM loop antenna

(SPB1152T)



- Attachment plug

(For United Kingdom only)
(SJP9009)



- AM antenna holders

(SMA233-1M)

(SMA231M)



(A)



(B)

- Screws..... 2

(XTN3 + 10AFZ)



Tuner

ST-G70L**DEUTSCH****■ MESSUNGEN UND JUSTIERUNGEN****LW/MW/FM****Einstellungen der Bedienelemente und zu verwendende Geräte.**

- MW und UKW Meßsender (MW und UKW Nebsender)
- Stereo-Modulator
- Verzerrungs-Analysator
- Elektronische Wechselstrom- und Gleichstrom-Voltmeter (EVM)
- Keramischer Kondensator (200pF)
- Oszilloskop
- Frequenzzähler
- Drosselspule (100µH)
- Widerstand (100kΩ)

Anmerkung: Für L251 (LW-Antennenspule) werden justiert Ersatzteil geliefert. Den Kern dieses Teils daher nicht drehen.

MW-ZF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf "MW" Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **450kHz** einstellen.
4. T201 auf maximale Ausgangsleistung abgleichen.

MW-HF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung (1) gezeigt.
2. Stellen Sie die Einheit auf "MW" Betrieb.
3. Radio und Signalgenerator auf **522kHz** einstellen.
4. L204 so justieren, daß die in Signalzustand gemessene Spannung **1.0V**.
5. Der Testaufbau ist in der Abbildung (2) gezeigt.
6. Radio und Signalgenerator auf **612kHz** einstellen.
7. L203 auf maximale Ausgangsleistung abgleichen.
8. Radio und Signalgenerator auf **1503kHz** einstellen.
9. CT201 auf maximale Ausgangsleistung abgleichen.
10. Die Schritte 6~9 wiederholen.

Anmerkung:

Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer Verstärkungsregelung (AGC) sein.

LW-HF-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf "LW" Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **155kHz** einstellen.
4. L252 auf maximale Ausgangsleistung abgleichen.
5. Die Radiofrequenzanzeige und den Messender auf **353kHz** einstellen.
6. CT251 auf maximale Ausgangsleistung abgleichen.
7. Die Schritte 3~6 wiederholen.

Anmerkung:

Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer Verstärkungsregelung (AGC) sein.

UKW-MONO-VERZERRUNGS-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf "FM und RF normal" Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **100.10MHz** einstellen.
4. Den Kern von T101 so justieren, daß die im Signalzustand gemessene Spannung **0mV** im 300mV-Bereich beträgt.
5. T105 so justieren, daß der Verzerrungsfaktor des linken Kanals minimal wird.
6. Schritte 4 und 5 einige Male wiederholen.
7. Versichern Sie sich, daß die Verzerrungsfaktoren von Kanal L und Kanal R annähernd gleich sind und auf ein Minimum gehalten sind.

Anmerkung:

Für die Justierung ist ein Schraubendreher aus Kunststoff zu verwenden.

UKW-HF-JUSTIERUNG

1. Testausrüstung wie gezeigt anschließen.
2. Stellen Sie die Einheit auf **"FM und RF narrow"** Betrieb.
3. Radio und Signalgenerator auf **90.1 MHz** einstellen.
4. **L1, L2 und L4** für maximalen Ausgang einstellen.
5. Radio und Signalgenerator auf **106.1 MHz** einstellen.
6. **CT1, CT2 und CT3** für maximalen Ausgang einstellen.
7. Schritte 5 und 6 wiederholen.

MPX-SGO-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Den UKW-Betriebsart-Wahlshalter in die **"on/auto"** Position stellen.
3. Radio und Meßsender auf **100.1 MHz** einstellen.
4. **VR302** auf **19kHz ± 30Hz** auf der Frequenzzähleranzeige justieren.

• VERWENDUNG EINES ALTERNATIVSYSTEMS

1. Stereosignal vom Meßsender eingeben oder eine Stereo-Sendung empfangen.
2. **VR302** justieren, bis die Stereo-Anzeige aufleuchtet. Den Arm von **VR302** mit Lack sichern, wie in der Abbildung gezeigt.

ABGLEICH DER UKW-STEREO-VERZERRUNG

1. Für den Anschluß des Prüfgerätes siehe die Abbildung.
2. Das Gerät auf **"FM und normal"** stellen.
3. Das Hochfrequenz-Anzeigegerät und den Signalgenerator auf **100,10 MHz** stellen.
4. **T1** so einstellen, daß der Verzerrungsfaktor des linken Kanals minimal wird.
5. Sicherstellen, daß die Verzerrungsfaktoren des linken und rechten Kanals nahezu übereinstimmen und beide minimal sind.
6. Das Gerät auf **"IF narrow"** stellen.

7. **T104** so einstellen, daß der Verzerrungsfaktor des linken Kanals minimal wird.
8. Sicherstellen, daß die Verzerrungsfaktoren des linken und rechten Kanals nahezu übereinstimmen und beide minimal sind.

Hinweis:

1. Der für den Abgleich verwendete Schraubendreher sollte aus Kunstharz hergestellt sein.
2. **T1** sollte nicht mehr als 1/4 Drehung (90 Grad) nach einer Seite gedreht werden.
3. **T104** sollte nicht mehr als 1/6 Drehung (60 Grad) nach einer Seite gedreht werden.

TRENNUNGS-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf **"FM und normal"** Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **100,10 MHz** einstellen.

4. **VR303** so justieren, daß der R-Ausgang minimal ist, wenn der Stereomodulator im L-Betriebszustand (Linker Kanal moduliert) ist.
5. **VR304** so justieren, daß der L-Ausgang minimal ist, wenn der Stereomodulator im R-Betriebszustand (Linker Kanal moduliert) ist.

ABGLEICH DES UKW-SIGNALSTÄRKEPEGELS

1. Für den Anschluß des Prüfgerätes siehe die Abbildung.
2. Das Gerät auf **"FM und normal"** stellen.
3. Das Hochfrequenz-Anzeigegerät und den Signalgenerator auf **100,10 MHz** stellen.
4. Durch Drücken der UKW-Signaltaste das Flüssigkristalldisplay von **"frequency"** auf **"dB"** umschalten.

5. **VR103** so einstellen, daß **50dB** angezeigt wird. **"50dB"** wird auf dem Flüssigkristalldisplay angezeigt.
6. **VR102** so einstellen, daß **70dB** angezeigt wird. **"70dB"** wird auf dem Flüssigkristalldisplay angezeigt.
7. **VR101** so einstellen, daß **86dB** angezeigt wird. **"86dB"** wird auf dem Flüssigkristalldisplay angezeigt.
8. Die Schritte 5~7 wiederholen.

ABGLEICH DER UKW-ZF-SCHMAL-VERSTÄRKUNG

1. Für den Anschluß des Prüfgerätes siehe die Abbildung.
2. Das Gerät auf **"FM und normal"** stellen.
3. Durch Drücken der UKW-Signaltaste das Flüssigkristalldisplay von **"frequency"** auf **"dB"** umschalten.

4. Sicherstellen, daß **"dB"** angezeigt wird.
5. Das Gerät auf **"IF narrow"** stellen.
6. **VR105** so einstellen, daß die Werte für **"dB"** von **"IF normal"** und **"IF narrow"** miteinander übereinstimmen.

38-kHz-AUSBLENDKREISES-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf **"FM"** Betrieb.

3. Die Radiofrequenzanzeige und den Messender auf **100,10 MHz** einstellen.
4. **VR303** auf minimal Ausgangsleistung abgleichen.

ESPAÑOL

MEDICIONES Y AJUSTES

LW/MW/FM

Posiciones de control y equipo usado.

- Generador de señales de AM y FM (AM y FM-SG)
 - Voltímetro electrónico de CA y CC (EVM)
 - Analizador de distorsiones
 - Osciloscopio
 - Frecuencímetro
- Frecuencímetro
 - Bobina de choque (100μH)
 - Resistor (100kΩ)
 - Condensador cerámico (200pF)

Nota: Para L251 (bobina antena LO) son suministradas piezas ajustadas. Por lo tanto, no gire los núcleos de estas piezas.

AJUSTE DE MW-IF

1. La conexión del equipo de pruebas se muestra en la figura.
 2. Poner la unidad en modalidad de "MW".
3. Ajustar la puesta de la presentación de radiofrecuencia y generador de señales a 450kHz.
 4. Ajustar T201 para salida máxima.

AJUSTE DE MW-RF

1. La conexión del equipo de pruebas se muestra en la figura (1).
 2. Poner la unidad en modalidad de "MW".
 3. Poner la presentación de la radio y el generador de señales en 522kHz.
 4. Ajustar L204 de manera que el voltaje medido en modalidad de señal sea 1.0V.
 5. La conexión del equipo de pruebas se muestra en la figura.
 6. Poner la presentación de la radio y el generador de señales en 612kHz.
7. Ajustar L203 para salida máxima.
 8. Poner la presentación de la radio y el generador de señales en 1503kHz.
 9. Ajustar CT201 para salida máxima.
 10. Repita los pasos 6. al 9.

Nota:

El nivel de entrada de antena ha de ser lo más bajo posible estando libre de AGC (control automático de ganancia).

AJUSTE DE LO-RF

1. La conexión del equipo de pruebas se muestra en la figura.
 2. Poner la unidad en modalidad de "LW".
 3. Poner la puesta de la presentación de radiofrecuencia y generador de señales a 155kHz.
 4. Ajustar L252 para salida máxima.
 5. Poner la puesta de la presentación de radiofrecuencia y generador de señales a 353kHz.
6. Ajustar CT251 para salida máxima.
 7. Repetir los pasos 3. al 6.

Nota:

El nivel de entrada de antena ha de ser lo más bajo posible estando libre de AGC (control automático de ganancia).

AJUSTE DE DISTORSION MONO FM

1. La conexión del equipo de pruebas se muestra en la figura.
 2. Poner la unidad en modalidad de "FM y RF normal".
 3. Poner la puesta de la presentación de radiofrecuencia y generador de señales a 100,10MHz.
 4. Ajustar el núcleo de T101 de manera que el voltaje medido en modalidad de señal sea 0mV.
5. Ajustar T105 de manera que el factor de distorsión de CH-I se minimice.
 6. Repetir los pasos 4 y 5 algunas veces.
 7. Asegurarse de que los factores de distorsión de CH-I y CH-D sean casi los mismos y los mínimos.

Nota:

El destornillador de ajuste usado debe estar hecho de resina.

AJUSTE DE FM-RF

1. La conexión del equipo de pruebas se muestra en la figura.
 2. Poner la unidad en modalidad de "FM y RF narrow".
 3. Poner la presentación de la radio y el generador de señales en 90.1MHz.
4. Ajustar L1, L2 y L4 para salida máxima.
 5. Poner la presentación de la radio y el generador de señales en 106.1MHz.
 6. Ajustar CT1, CT2 y CT3 para salida máxima.
 7. Repetir los pasos 5 y 6.

AJUSTE DE MPX VCO (OSCILADOR CONTROLADO POR VOLTAJE MPX)

1. La conexión del equipo de pruebas se muestra en la figura.
 2. Poner la unidad en la posición de "on/auto".
 3. Poner la presentación de la radio y la puesta del generador de señales en 100.1MHz.
 4. Ajustar VR302 para 19kHz±30Hz en lectura de frecuencímetro.
- USANDO SYSTEMA ALTERNATIVO
 - 1. Aplicar señal estereofónica del generador o recibir la emisión estereofónica.
 - 2. Ajustar VR302 hasta que la presentación de estéreo se encienda. Fijar el brazo de VR302 como se muestra en la figura.

AJUSTE DE LA DISTORSION DEL ESTEREO FM

1. La conexión del equipo de prueba se muestra en la figura.
 2. Ponga la unidad en la modalidad "FM y normal".
 3. Ponga el visualizador de radiofrecuencia y el generador de señales en 100,10MHz.
 4. Ajuste T1 de modo que el factor de distorsión de L-CH se haga mínimo.
 5. Asegúrese de que los factores de distorsión de L-CH y R-CH sean similares entre si en el mínimo.
 6. Ponga la unidad en la modalidad "SI estrecha".
7. Ajuste T104 de modo que el factor de distorsión de L-CH se haga mínimo.
 8. Asegúrese de que los factores de distorsión de L-CH sean similares entre si en el mínimo.

Notas:

1. Debe utilizarse un destornillador de resina para realizar los ajustes.
2. T1 debe girarse como máximo 1/4 de vuelta (90 grados) en cada sentido.
3. T104 debe girarse como máximo 1/6 de vuelta (60 grados) en cada sentido.

AJUSTE DE SEPARACION

1. La conexión del equipo pruebas se muestra en la figura.
 2. Poner la unidad en modalidad de "FM y normal".
 3. Ajustar la puesta de la presentación de radiofrecuencia y generador de señales a 100,10MHz.
4. Ajustar VR303 de manera que la salida de D quede minimizada cuando el modulador de estéreo esté en la modalidad "I". (modulación de CH-I.)
 5. Ajustar VR304 de manera que la salida de D quede minimizada cuando el modulador de estéreo esté en la modalidad "I". (modulación de CH-I.)

NIVEL DE AJUSTE DE LA INTENSIDAD DE LA SEÑAL DE FM

1. La conexión del equipo de prueba se muestra en la figura.
 2. Ponga la unidad en la modalidad "FM y normal".
 3. Ponga el visualizador de radiofrecuencia y el generador de señales en 100,10MHz.
 4. Cambie el visualizador de cristal liquido de "frecuencia" a "dB" pulsando el botón de la señal FM.
5. Ajuste VR103 de modo que se indique 50dB. En el visualizador de cristal liquido se indica "50dB".
 6. Ajuste VR102 de modo que se indique 70dB. En el visualizador de cristal liquido se indica "70dB".
 7. Ajuste VR101 de modo que se indique 86dB. En el visualizador de cristal liquido se indica "86dB".
 8. Repita los pasos: 5~7.

AJUSTE DE LA GANANCIA DE FM "SI ESTRECHA"

1. La conexión del equipo de prueba se muestra en la figura.
 2. Ponga la unidad en la modalidad "FM y normal".
 3. Cambie el visualizador de cristal liquido de "frecuencia" a "dB" pulsando el botón de la señal FM.
4. Verifique que se indique "dB".
 5. Ponga la unidad en la modalidad "SI estrecha".
 6. Ajuste VR105 de modo que los "dB" de "SI normal" y "SI estrecha" sean iguales entre si.

AJUSTE DE CIRCUITO DE CANCELACION, 38kHz

1. La conexión del equipo de pruebas se muestra en la figura.
 2. Poner la unidad en modalidad de "FM".
3. Ponga el visualizador de radiofrecuencia y el generador de señales en 100,10MHz.
 4. Ajustar VR303 para salida mínimos.

FRANÇAIS

MEURAGES ET REGLAGES

LW/MW/M.F.

Positionnements des commandes et équipement utilisé

- Générateur de signaux AM et FM (AM et FM-SG)
 - Modulateur stéréophonique
 - Analyseur de distorsion
 - Oscilloscope
 - Compteur de fréquence
- Bobine d'amortissement d'arrêt (100µH)
 - Résistance (100kΩ)
 - Condensateur céramique (200pF)
 - Voltmètre électronique à C.A. et C.C. (EVM)

Nota: Pour L251 (bobine ANT LW) des éléments réglés sont fournis. Aussi, ne pas tourner les noyaux de ces pièces.

REGLAGE DE A.M.-F.I.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
 2. Régler l'appareil sur le mode "MW".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 450kHz.
 4. Régler T201 pour une sortie maximale.

REGLAGE DE O.M.-H.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration (1).
 2. Régler l'appareil sur le mode "MW".
 3. Régler le cadran radio et le générateur de signaux sur 522kHz.
 4. Ajuster L204 de telle sorte que la tension mesurée sur le mode de signaux soit de 1.0V.
 5. Le raccordement de l'équipement d'essai est montré sur l'illustration (2).
 6. Régler le cadran radio et le générateur de signaux sur 612kHz.
7. Régler L203 pour une sortie maximale.
 8. Régler le cadran radio et le générateur de signaux sur 1503kHz.
 9. Régler CT201 pour une sortie maximale.
 10. Répéter les étapes 6~9.

Nota:

Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de again.

REGLAGE DE RE-LW

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
 2. Régler l'appareil sur le mode "LW".
 3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 155kHz.
 4. Régler L252 pour une sortie maximale.
 5. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 353kHz.
6. Régler CT251 pour une sortie maximale.
 7. Répéter les étapes 3~6.

Nota:

Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de again.

REGLAGE DE DISTORSION MONOPHONIQUE M.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
 2. Régler l'appareil sur le mode "FM et RF normal".
 3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 100.10MHz.
 4. Régler le noyau de T101 de telle sorte que la tension mesurée sur le mode de signaux soit de 0mV dans une plage de 300mV.
5. Ajuster T105 de telle que le facteur de sistorsion du canal de gauche soit minimisé.
 6. Répéter les étapes 4 et 5 quelques fois.
 7. S'assurer que les facteurs de distorsion du canal de gauche et du canal de droite soient sensiblement les mêmes et au minimum.

Nota:

Le tournevis de réglage utilisé devra être fait en résines.

REGLAGE DE F.M.-H.F.

1. Le raccordement de l'équipement d'essai est indiqué à la figure.
 2. Régler l'appareil sur le mode "FM et RF narrow".
 3. Régler le cadran radio et le générateur de signaux sur 90.1MHz.
 4. Régler L1, L2 et L4 pour obtenir une sortie maximale.
5. Régler le cadran radio et le générateur de signaux sur 106.1MHz.
 6. Régler CT1, CT2 et CT3 pour obtenir une sortie maximale.
 7. Répéter la marche à suivre 5 et 6.

REGLAGE MULTIPLEX DE L'OSCILLATEUR COMMANDE PAR VARIATION DE TENSION

1. Le raccordement de l'équipement d'essai est montré sur la figure.
 2. Régler l'appareil sur la position "on/auto".
 3. Régler le cadran radio et le générateur de signaux sur 100.1MHz.
 4. Ajuster VR302 pour 19kHz±30Hz sur le compteur de lecture de fréquences.
- EN UTILISANT UN SYSTEME ALTERNATIF

 1. Applique un signal stéréo à partir du générateur ou recevoir une émission stéréo.
 2. Ajuster VR302 jusqu' à ce que l'indicateur stéréo s'éclaire. Coller le bras de VR302 comme il montré sur la figure.

REGLAGE DE LA DISTORSION STERREO EN FM

1. Le raccordement des appareils de mesure est indiqué sur la figure.
 2. Placer l'appareil en mode "FM et normal".
 3. Régler le générateur et le compteur sur 100,10MHz.
 4. Régler T1 de sorte que le taux de distorsion dans la voie gauche (L) soit minimal.
 5. Vérifier que les taux de distorsion dans les voies droite (D) et gauche (L) sont les mêmes et très voisins du minimum.
 6. Placer l'appareil en mode "FI étroite".
7. Régler T104 de sorte que le taux de distorsion dans la voie gauche (L) soit minimal.
 8. Vérifier que les taux de distorsion dans voies droite (D) et gauche (L) sont les mêmes et très voisins du minimum.

Notes:

1. Le tournevis utilisé doit être entièrement fabriqué dans une matière isolante.
2. T1 ne doit pas être tourné de plus de 90° (1/4 de tour) dans un sens comme dans l'autre.
3. T104 ne doit pas être tourné de plus de 60° (1/6 de tour) dans un sens comme dans l'autre.

REGLAGE DE SEPARATION

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
 2. Régler l'appareil sur le mode "FM et normal".
 3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 100,10MHz.
4. Ajuster VR303 de telle sorte que la sortie de droite soit minimisée lorsque le modulateur stéréo est sur le mode "G". (modulation de canal de gauche.)
 5. Ajuster VR304 de telle sorte que la sortie de droite soit minimisée lorsque le modulateur stéréo est sur le mode "G". (modulation de canal de gauche.)

REGLAGE DU NIVEAU DU SIGNAL FM

1. Le raccordement des appareils de mesure est indiqué sur la figure.
 2. Placer l'appareil en mode "FM et normal".
 3. Régler le générateur et le compteur sur 100,10MHz.
 4. Changer l'indication de l'affichage à cristaux liquides de "fréquence" à "dB" en appuyant sur le bouton FM.
5. Régler VR103 de manière que l'indication "50dB" soit indiquée sur l'affichage.
 6. Régler VR102 de manière que l'indication "70dB" soit indiquée sur l'affichage.
 7. Régler VR101 de manière que l'indication "86dB" soit indiquée sur l'affichage.
 8. Répéter les opérations 5 à 7.

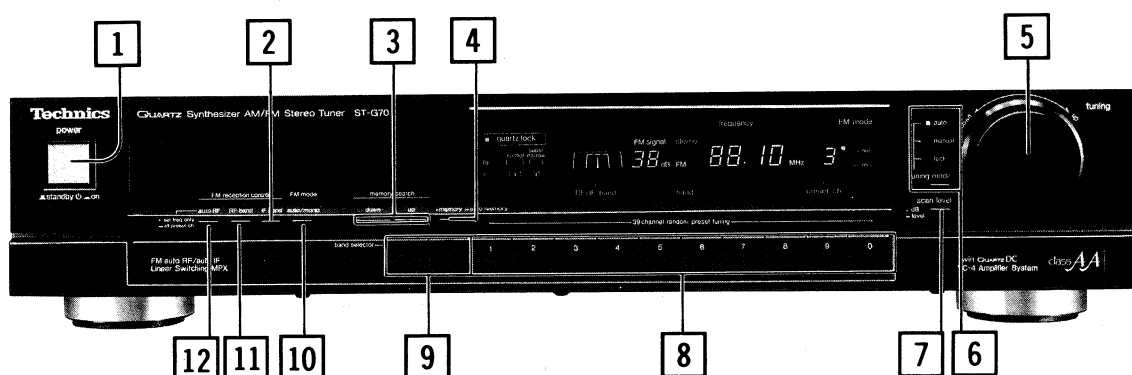
REGLAGE DU GAIN EN FM POUR LA BANDE PASSANTE FI ETROITE

1. Le raccordement des appareils de mesure est indiqué sur la figure.
 2. Placer l'appareil en mode "FM et normal".
 3. Changer l'indication de l'affichage à cristaux liquides de "fréquence" à "dB" en appuyant sur le bouton FM.
4. Vérifier que l'indication "dB" est bien fournie.
 5. Placer l'appareil en mode "FI étroite".
 6. Régler VR105 de manière que les valeurs en dB pour "FI normale" et "FI étroite" soient identiques.

REGLAGE DU CIRCUIT DE SUPPRESSION 38kHz

1. Leraccordment de l'équipement d'essai est montré sur la figure.
 2. Régler l'appareil sur le mode "FM".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 100,10MHz.
 4. Ajuster VR303 pour une sortie minimum.

FRONT PANEL CONTROLS AND FUNCTIONS



Control section

1 Power "standby ϕ /on" switch (power "standby ϕ /on")

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the "standby ϕ " position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

2 FM IF band selector (IF band)

The built-in computer of this unit detects the signal condition and functions accordingly to select the FM IF band automatically. This button is used to change it manually.

3 Memory-search button (memory search)

This button is used to confirm a memory presetting. If the button is pressed, the memorized frequency and "channel" number will be shown one after the other in order.

4 Memory button (memory)

This button is used when preset memory setting of the preset-tuning buttons is made.

5 Tuning control (tuning)

This control is used to select an FM or AM broadcast. When turning the control to the left, the frequency change downward. When turning the control to the right, the frequency change upward.

6 Tuning-mode selector/indicator (tuning mode)

Each time this selector is pressed, the selection changes, in sequence, to "auto", "manual" and "lock".

auto:

At this position, broadcast stations are automatically found when the tuning control is turned to the left or right until the frequency changes.

manual:

At this position, the tuning control can be used to locate the desired station.

lock:

At this position, the broadcast station now being heard is locked in, and other broadcast stations cannot be tuned to, even if turning the tuning control.

7 Scan level selector (scan level)

This button is used for setting or confirming the level of the reception signal during automatic FM tuning.

8 Preset-tuning buttons (39 channel random preset tuning)

These buttons are used to preset FM and AM broadcast frequencies into the memory of this unit, and are also pressed to select the desired preset frequencies.

9 Band selectors (band selector)

FM:

Press this button to listen to an FM broadcast.

freq shift:

When the button is pressed slightly longer, the reception frequency increases by 0.025 MHz (25 kHz). (The final figure of the frequency display changes to "2" or "7".)

In order to return to the original frequency indication, press this button for about 2 seconds again.

MW:

Press this button to listen to an AM broadcast.

allocation:

This button is also used to select a frequency step of either 9 kHz or 10 kHz.

When the AM button is pressed for about 4 seconds, the AM frequency step will change to 10 kHz per step. (This step is set to 9 kHz before shipment.)

Set to the appropriate position for your locality.

LW:

Press this button to listen to an LW broadcast.

freq shift:

When the LW button is pressed for about 4 seconds during reception of an LW broadcast, the LW frequency will decrease by 2 kHz.

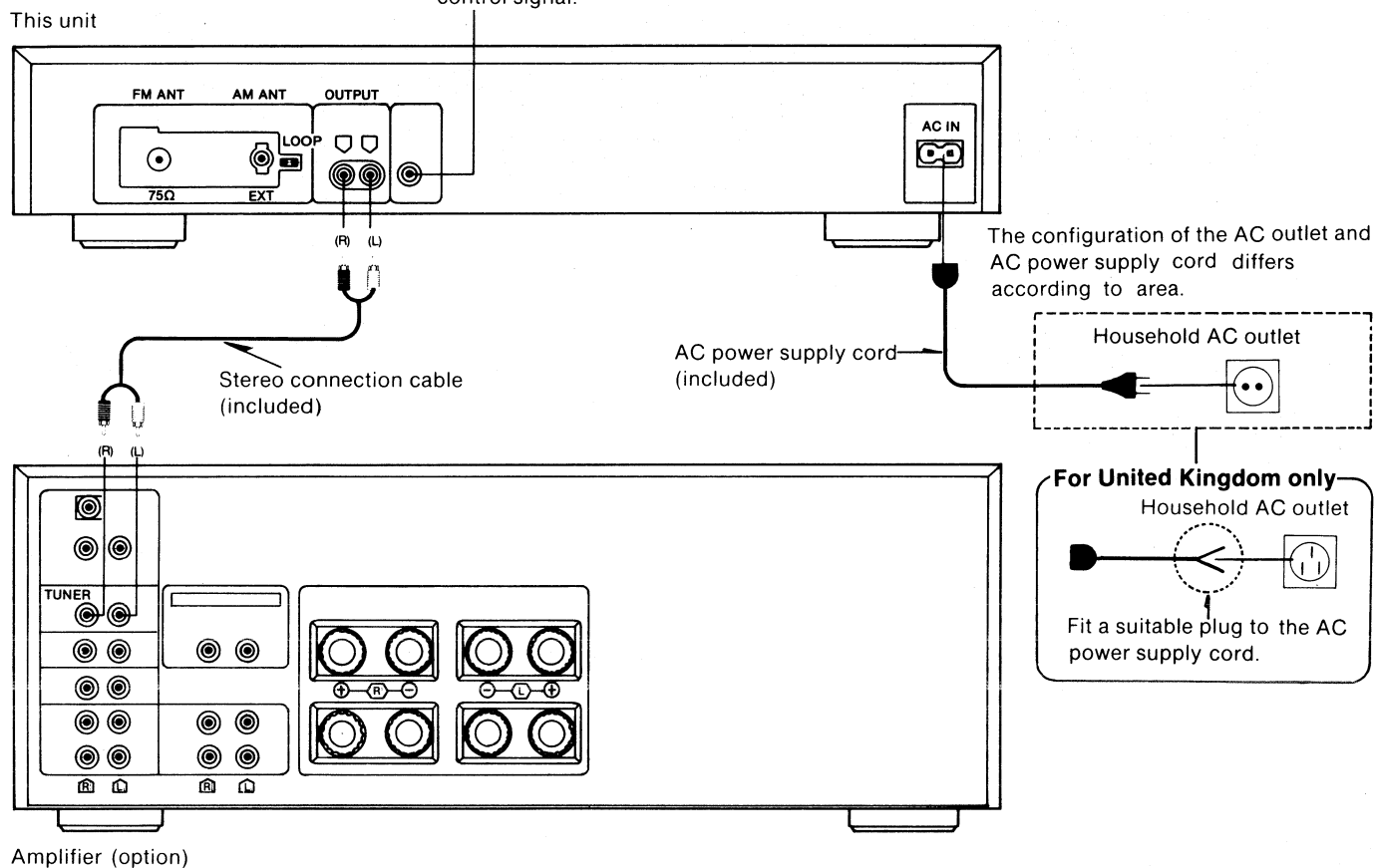
So, for example, to receive 153 kHz, tune to 155 kHz, and then press this button.

In order to return to the original frequency indication, press this button for about 4 seconds again.

CONNECTIONS

Control input terminal (CONTROL INPUT):

This terminal is used for the connection of a timer for the purpose of controlling the tuner by means of an external control signal.

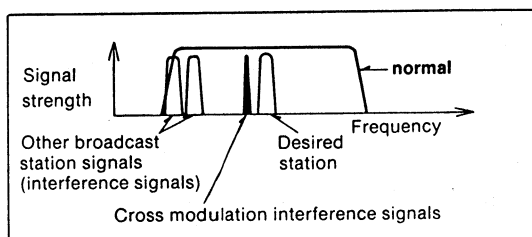


FM AUTOMATIC RF/AUTOMATIC IF

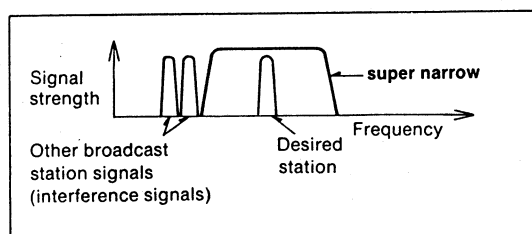
In order to improve tone quality during reception of FM broadcasts when the FM band is crowded with many FM broadcast stations, this model includes "normal" circuitry and "super narrow" circuitry both for the RF (radio frequency) stage and for the IF (intermediate frequency) stage. This special circuitry functions to detect interference signals when several conflicting signals are being received, and to automatically select the optimum reception conditions. (There is an automatic switchover to the "super narrow" circuitry when interference signals are present, and to the "normal" circuitry when they are not a problem.)

The "super narrow" circuitry of the RF stage eliminates interference signals caused as the result of two or more strong broadcast station signals. The "super narrow" circuitry of the IF stage eliminates interference signals caused by broadcast station signals on adjacent frequencies.

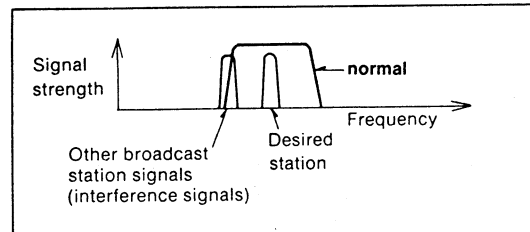
FM RF-band automatic-selector (auto RF)



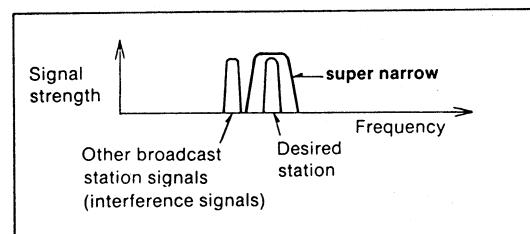
Automatic switchover
(Manual switching is also possible.)

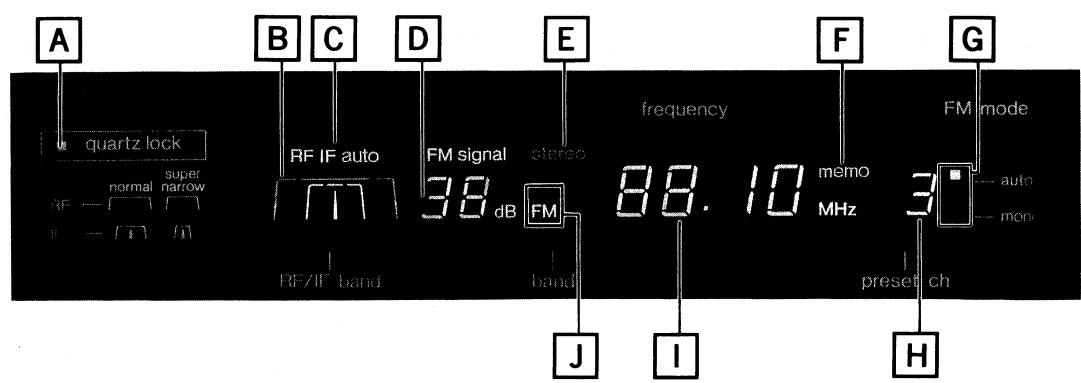


FM IF-band selector (IF band)



Automatic switchover
(Manual switching is also possible.)





Display section

10 FM mode selector (FM mode)

If noise is excessive in stereo broadcasts, a switchover to monaural reception can be made. When there is a change to monaural reception, the illumination of the FM mode indicator changes to the "mono" position.

11 FM RF-band selector (RF band)

This button can be used to switch the RF bandwidth to either the "normal" width or the "super narrow" width by manual operation. Interference signals are removed if switched to "super narrow".

12 FM RF-band automatic-selector (auto RF)

It sometimes happens, during the reception of FM broadcasts, that a station other than the desired station is received, or interference noise is excessive, even though there is no broadcast station other than the desired station on a nearby frequency. The reason for this is that interference signals are produced in a frequency band in which there is actually no broadcast station when two or more strong broadcast stations' signals (interference signals) are input to the unit's "front end" (input stage). These interference signals are known as "cross modulation" interference signals, and they cause interference noise to be heard in the signals from the desired broadcast station. This model is designed to eliminate such cross modulation interference signals by automatically switching the bandwidth of the RF (radio frequency; high frequency) band to the "super narrow" bandwidth.

- set freq only:
By lightly tapping this selector, the presence or not of interference signals within the broadcast signals being received is detected, and there is an automatic switchover to either the "normal" or "super narrow" circuitry as appropriate.

- all preset ch:
If this selector is pressed and held for a slightly longer time, the presence or not of interference signals within the broadcast signals of all FM broadcast stations that have been preset to the unit's memory is detected. There is then an automatic switchover to either the "normal" or "super narrow" circuitry as appropriate, and then an entry is automatically made (to the memory for these same "channels") of the "normal" or "super narrow" reception condition.

A Quartz-lock indicator (quartz lock)

This indicator illuminates when tuned precisely to an FM or AM station.

B FM RF/IF band indicator (RF/IF band)

These indicators show the FM reception conditions.

C FM RF/IF automatic-select indicator (RF IF auto)

This indicator illuminates when the FM RF-band automatic-selector is pressed.

D FM signal-strength display (FM signal)

This display usually shows the reception level of FM broadcasts (maximum 86 dB); when the scan-level selector is pressed and held, the station-tuning level is displayed in the sequence 30 → 40 → 50.

E FM stereo indicator (stereo)

This indicator automatically illuminates when an FM stereo broadcast is being received. It will not illuminate if the FM mode selector is set to the monaural mode.

F Memory indicator (memo)

This indicator illuminates when the memory button is pressed.

G FM mode indicator (FM mode)

When FM broadcasts are being received, usually the "auto" indication is illuminated. When the FM mode selector is used to select monaural reception, the illumination of the FM mode indicator changes to the "mono" position.

H Channel display (preset ch)

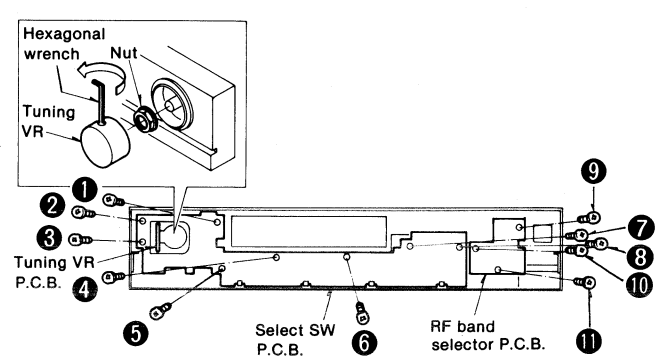
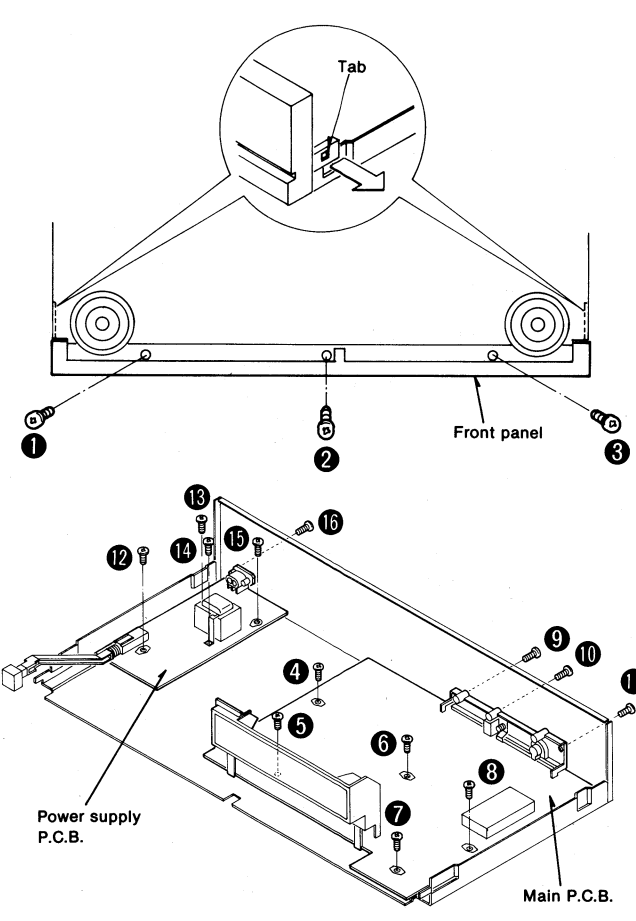
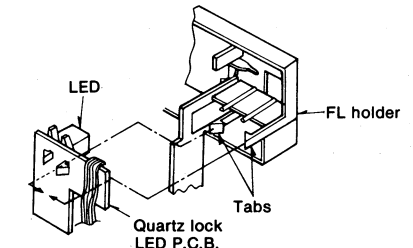
The channel number selected by the preset-tuning buttons is displayed.

I Digital frequency display

The reception frequency of the FM or AM broadcast selected by using the tuning control or the preset-tuning buttons is indicated.

J Band indicator (band)

DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet	Ref. No. 3	How to remove the LED/operation SW P.C.B., RF band selector P.C.B. and tuning VR P.C.B.
Procedure 1	Remove the 5 screws (1~5).	Procedure 1 → 2 → 3	(1) How to remove the LED/operation SW P.C.B. - Remove the 8 screws (1~8). (2) How to remove the RF band selector P.C.B. - Remove the 3 screws (9~11). (3) How to remove the tuning VR P.C.B. - Remove the tuning VR with hexagonal wrench. - Remove the nut.
Ref. No. 2	How to remove the main P.C.B. and power supply P.C.B.		
Procedure 1 → 2	(1) How to remove the main P.C.B. - Remove the 3 screws (1~3). - Remove the 2 tabs and the front panel. - Remove the 8 screws (4~11). (2) How to remove the power supply P.C.B. - Remove the 5 screws (12~16).		
Ref. No. 4	How to remove the quartz lock LED P.C.B.		
Procedure 1 → 2 → 4	Remove the 2 tabs.		

MEASUREMENTS AND ADJUSTMENTS

LW/MW/FM

Control positions and equipment used

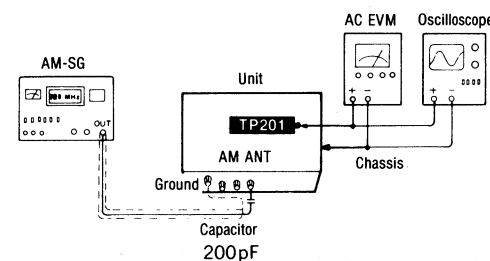
- AM and FM signal generator (AM and FM-SG)
- Stereo modulator
- Distortion analyser
- Oscilloscope
- Frequency counter
- Choke coil (100 μ H)
- Resistor (100k Ω)
- Ceramic capacitor (200pF)
- AC and DC electronic voltmeter (EVM)

Note: For L251 (LW ANT coil), they are supplied as adjusted parts. So, do not turn the cores of the parts.

MW-IF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "MW" mode.
3. Set the radio frequency display and signal generator to 450kHz.
4. Adjust T201 for maximum output.

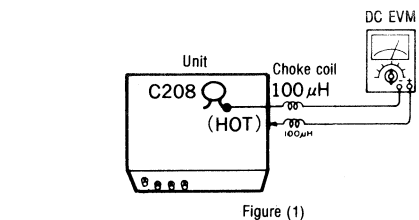
AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency.....400Hz



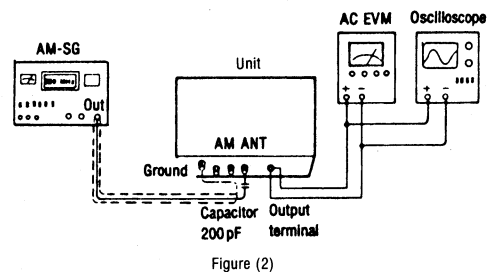
MW-RF ADJUSTMENT

1. Test equipment connection is shown in figure (1).
2. Set the unit to "MW" mode.
3. Set the radio frequency display and signal generator to 522kHz.
4. Adjust L204 so that the voltage measured in signal mode is 1.0V.
5. Test equipment connection is shown in figure (2).
6. Set the radio frequency display and signal generator to 612kHz.
7. Adjust L203 for maximum output.
8. Set the radio frequency display and signal generator to 1503kHz.
9. Adjust CT201 for maximum output.
10. Repeat steps 6~9.

Note: Antenna input level must be as low as possible being free from AGC.



AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency.....400Hz

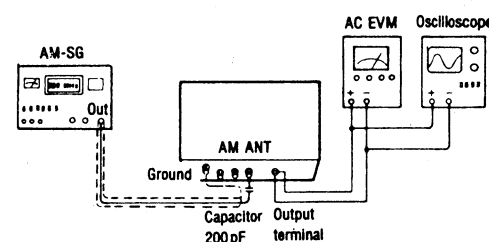


LW-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "LW" mode.
3. Set the radio frequency display and signal generator to 155kHz.
4. Adjust L252 for maximum output.
5. Set the radio frequency display and signal generator to 353kHz.
6. Adjust CT251 for maximum output.
7. Repeat steps 3 ~ 6.

Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION
Modulation 30%
Modulation frequency 400Hz

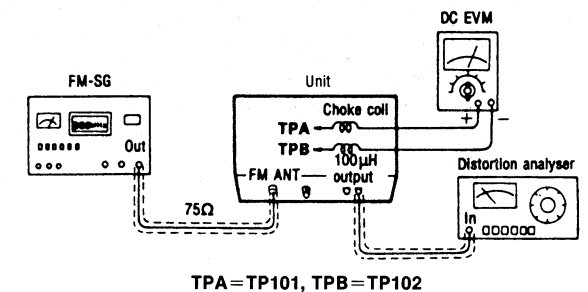


FM MONO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM and RF normal" mode.
3. Set the radio frequency display and signal generator to 100.10MHz.
4. Adjust the core of T101 so that the voltage measured in signal mode is 0mV in 300mV range.
5. Adjust T105 so that the distortion factor of L-CH is minimized.
6. Repeat steps 4 and 5.
7. Make sure that the distortion factors of L-CH and R-CH are nearly the same and minimum.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency.....1kHz
Output level.....66dB

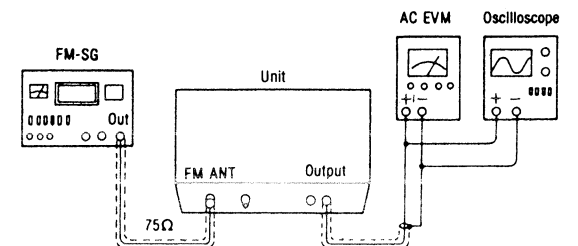


TPA=TP101, TPB=TP102

FM-RF ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM and RF narrow" mode.
3. Set the radio frequency display and signal generator to 90.1MHz.
4. Adjust L2 and L4 for maximum output.
5. Set the radio frequency display and signal generator to 100.1MHz.
6. Adjust T1 for maximum output.
7. Adjust T104 for maximum output.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency.....1kHz



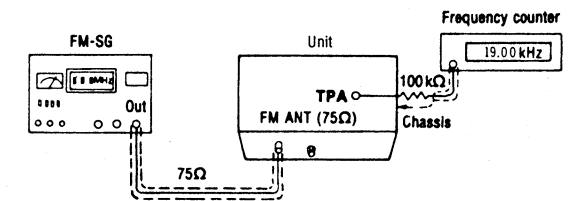
MPX VCO ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "on/auto" position.
3. Set the radio dial and signal generator to 100.10MHz.
4. Adjust VR302 for 19kHz $\pm$ 30Hz on frequency counter reading.

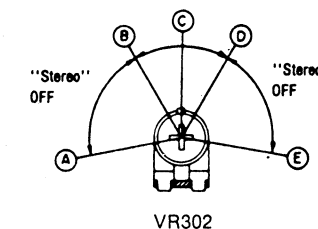
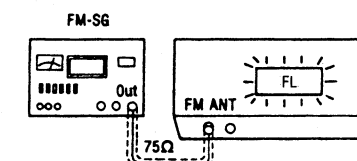
USING ALTERNATE SYSTEM

1. Apply stereo signal from generator or receive the stereo broadcast.
2. Adjust VR302 until stereo indicator lights up. Fix the arm of VR302 as shown in figure.

FM SIGNAL GENERATOR CONDITION
Modulation 0%
Modulation frequency.....0
Output level.....66dB



TPA=TP301, Frequency counter:19.00 kHz



- Ⓐ-Ⓑ, "Stereo" OFF position
- Ⓒ-Ⓓ, "Stereo" ON position (Indicator lighting)
- Ⓔ, Adjust point of pilot circuit

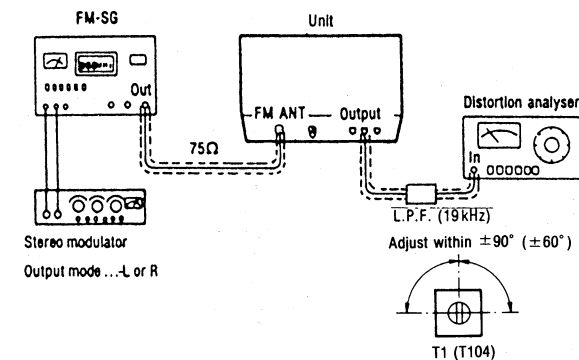
FM STEREO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM and normal" mode.
3. Set the radio frequency display and signal generator to 100.10 MHz.
4. Adjust T1 so that the distortion factor of L-CH is minimized.
5. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.
6. Set the unit to "IF narrow" mode.
7. Adjust T104 so that the distortion factor of L-CH is minimized.
8. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.

Note: 1. The adjusting screwdriver used should be made of resin.
 2. T1 should be rotated no more 1/4 turn (90 deg.) on either side.
 3. T104 should be rotated no more 1/6 turn (60 deg.) on either side.

FM SIGNAL GENERATOR CONDITION

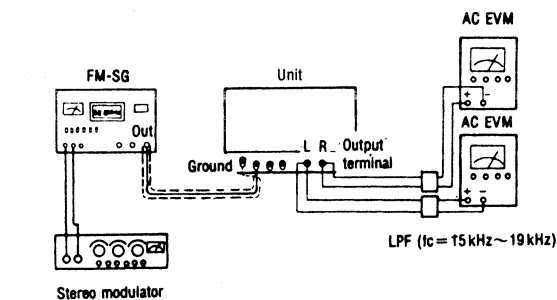
Modulation "L" mode or "R" mode 45%,
 Pilot 10%
 Modulation frequency 1 kHz (Pilot 19 kHz)
 Output level 66 dB

**SEPARATION ADJUSTMENT**

1. Test equipment connection is shown in figure.
2. Set the unit to "FM and normal" mode.
3. Set the radio frequency display and signal generator to 100.10 MHz.
4. Adjust VR301 so that the R-CH output is minimized when stereo modulator is in "L" (L-CH modulation) mode.

FM SIGNAL GENERATOR CONDITION

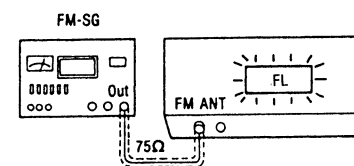
Modulation "L" mode or "R" mode 45%,
 Pilot 10%
 Modulation frequency 1 kHz (Pilot 19 kHz)
 Output level 66 dB

**FM SIGNAL STRENGTH LEVEL ADJUSTMENT**

1. Test equipment connection is shown in figure.
2. Set the unit to "FM and normal" mode.
3. Set the radio frequency display and signal generator to 100.10 MHz.
4. Change LCD display from "frequency" to "dB" by pressing the FM signal button.
5. Adjust VR103 so that 50 dB is indicated. "50 dB" is indicated on the LCD display.
6. Adjust VR102 so that 70 dB is indicated. "70 dB" is indicated on the LCD display.
7. Adjust VR101 so that 86 dB is indicated. "86 dB" is indicated on the LCD display.
8. Repeat steps 5~7.

FM SIGNAL GENERATOR CONDITION

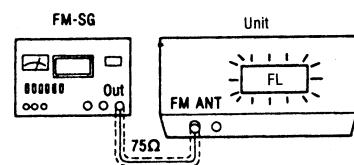
Modulation 30%
 Modulation frequency 1 kHz
 Output level 56, 76, 92 dB

**FM IF NARROW GAIN ADJUSTMENT**

1. Test equipment connection is shown in figure.
2. Set the unit to "FM and normal" mode.
3. Change LCD display from "frequency" to "dB" by pressing the FM signal button.
4. Confirm that "dB" is indicated.
5. Set the unit to "IF narrow" mode.
6. Adjust VR105 that the "dB" of "IF normal" and "IF narrow" are the same with each other.

FM SIGNAL GENERATOR CONDITION

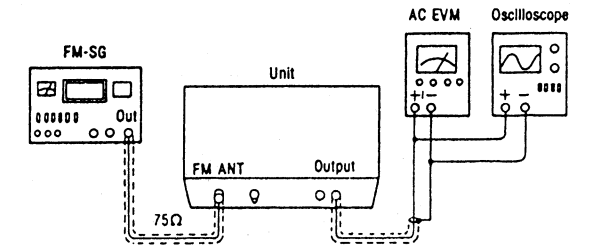
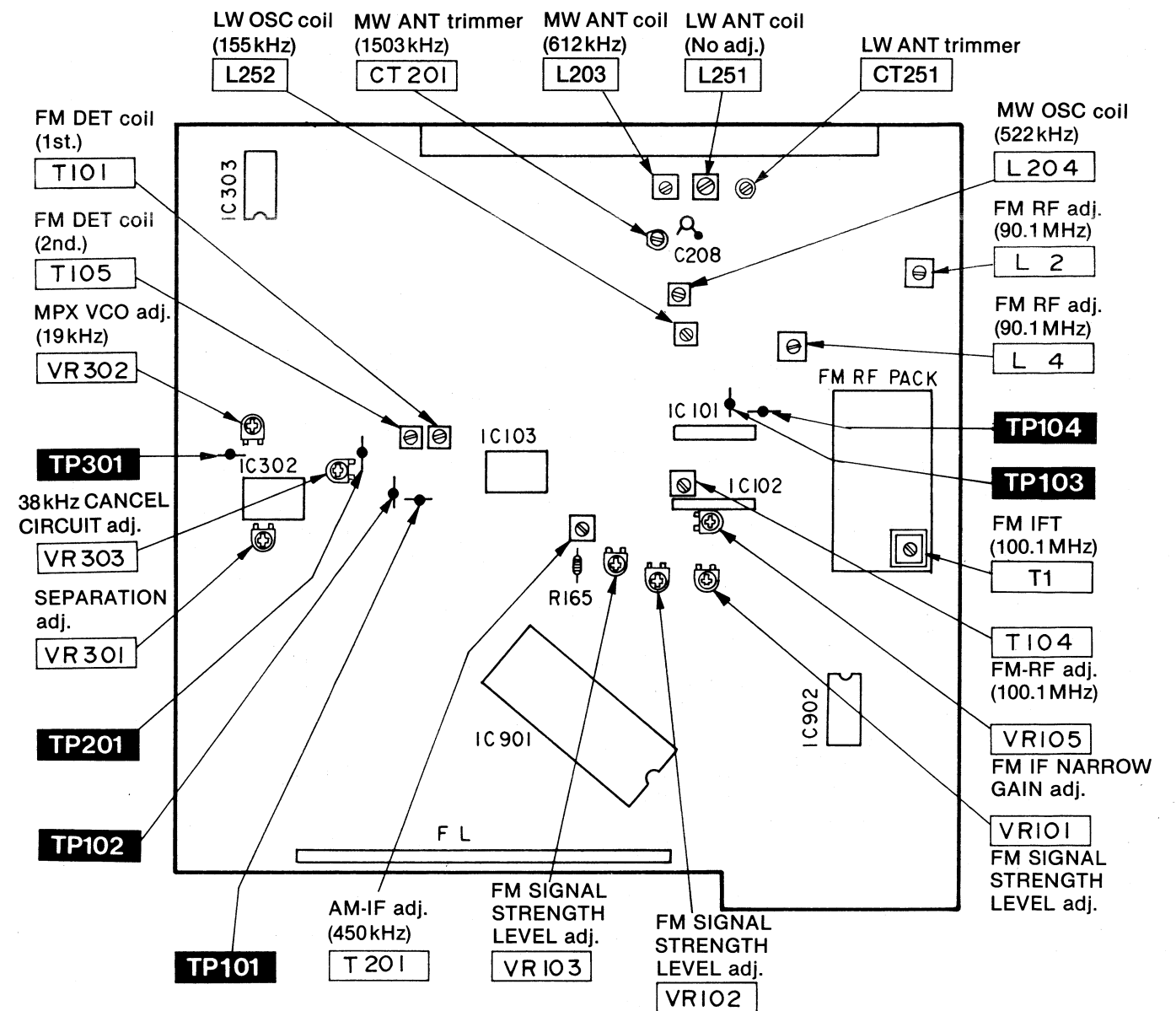
Modulation 30%
 Modulation frequency 1 kHz
 Output level 26 dB

**38 kHz CANCEL CIRCUIT ADJUSTMENT**

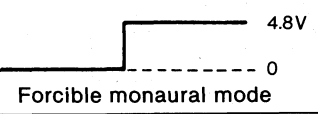
1. Test equipment connection is shown in figure.
2. Set the unit to "FM" position.
3. Set the radio frequency display and signal generator to 100.10 MHz.
4. Adjust VR303 so that the output is minimized.

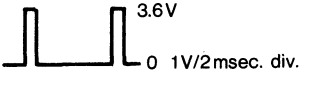
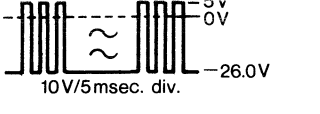
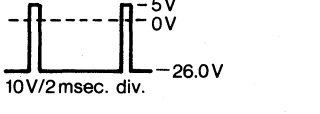
FM SIGNAL GENERATOR CONDITION

Modulation Stereo "L + R" mode 0%
 Pilot 10%
 Modulation frequency 1 kHz (Pilot 19 kHz)
 Output level 66 dB

**• Adjustment Points**

FUNCTION OF TERMINAL (IC901: M50941-421SP)

PIN NO.	IN/OUT	MARK	DESCRIPTION OF TERMINAL
1	INPUT	VREF	Reference voltage terminal.
2	—	NC	Not used in this unit.
3	INPUT	A	Tuning volume up/down control terminal.
4		B	
5 } 7	INPUT	SSL1 } SSL3	FM signal level detector terminal.
8	INPUT	SD	Station detection of auto tuning terminal. •Received: "H", No signal: "L"
9	INPUT	STEREO	Stereo signal detection terminal. •Stereo: "L", Monaural: "H"
10 • 17	OUTPUT	TUNING 0 • TUNING 1	Tuning mode LED (auto/manual/lock) drive terminal.
11	OUTPUT	RF BAND	FM RF BAND selector terminal. •"normal": "L", "super narrow": "H"
12	OUTPUT	IF BAND	FM IF BAND selector terminal. •"normal": "L", "super narrow": "H"
13	—	NC	Not used in this unit.
14	OUTPUT	REC	REC carriburation (333Hz) signal terminal. •REC switch ON: "H", REC switch OFF: "L"
15	OUTPUT	MONO	Forcible monaural selection terminal.  Forcible monaural mode
16	OUTPUT	MUTE	Terminal to eliminate shock noise due to unlocking at PLL. <Muting output> •Pin 25 (CE) is "L"→"H" or "H"→"L" •Power switch "off". •Frequency change. (up/down, FM→AM (MW/LW), REC). •FM RF/IF selection.
18	OUTPUT	SRDY	PLL data output terminal. SRDY: serial I/O enable signal, CLK: clock signal, SOUT: serial data signal.
19		CLK	
20		SOUT	
21	INPUT	SIN	Control input terminal.
22	OUTPUT	T1	Clock pulse waveform output terminal. •FM: 1kHz signal (duty 50%)
	JTPUT	T2	Clock pulse waveform output terminal. •REC "ON": 333Hz signal (duty 50%)

PIN NO.	IN/OUT	MARK	DESCRIPTION OF TERMINAL
24	INPUT	INT1	Remote control input terminal. Not used in this unit.
25	INPUT	INT2	Power supply detection terminal.
26 • 32	—	Vss	Ground terminal.
27	INPUT	RESET	Reset signal terminal.
28	INPUT	XIN	Connecting terminal for crystal oscillator.
29	OUTPUT	XOUT	
30	—	XCIN	
31	—	XCOUT	Not used in this unit.
33	—	NC	
34 } 37	INPUT	R0 } R3	Terminal for key return signal to external key matrix. 
38	INPUT	VP	Power supply terminal for FL display.
39 } 54	OUTPUT	S0 } S15	Segment signal terminal for FL display. 
55	—	NC	Not used in this unit.
56 } 62	OUTPUT	T1 } T7	Terminal for key scan signal to external key matrix and grid signal terminal for FL display. 
63	INPUT	AVcc	Power supply terminal of device.
64	INPUT	Vcc	

RESISTORS & CAPACITORS**Notes :** * Important safety notice :Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.**Numbering System of Resistor****Example:**

ERD	25	F	J	102
Type	Wattage (1/4W)	Shape	Tolerance	Value (1K Ω)
ERX	2	AN	J	471
Type	Wattage (2W)	Shape	Tolerance	Value (470 Ω)

Numbering System of Capacitor**Example:**

ECKD	1H	102	Z	F
Type	Voltage (50V)	Value (0.001 μ F)	Tolerance	Peculiarity
ECEA	50	M	330	
Type	Voltage (50V)	Peculiarity	Value (33 μ F)	

● Capacity are in microfarads (μ F) unless specified otherwise, P=Pico-farads (pF) F=Farads (F).● Resistance are in ohms (Ω), unless specified otherwise, 1K=1,000 Ω , 1M=1,000k Ω

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W 12 : 1/2W	J : $\pm 5\%$
ERG : Metal Oxide	14 : 1/4W 25 : 1/4W	F : $\pm 1\%$
ERQ : Fuse Type Metal	1A : 1W 18 : 1/8W	G : $\pm 2\%$
ERX : Metal Film	S2 : 1/4W S1 : 1/2W	J : $\pm 5\%$
ERD L : Carbon (chip)	2F : 1/4W 50 : 1/2W	K : $\pm 10\%$
ERO K : Metal Film (chip)	2A : 2W 3A : 3W	M : $\pm 20\%$
ERC : Solid	6G : 1/10W 8G : 1/8W	
ERF : Incombustible Box-Shaped		
ERM : Wire-Wound		
RRJ : Cip Resistor		
ERJ : Cip Resistor		

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic	0J : 6.3V 1A : 10V	K : $\pm 10\%$
ECCD : Ceramic	1C : 16V 1E : 25V	M : $\pm 20\%$
ECKD : Ceramic Capacitor	1H : 50V 1V : 35V	Z : +80 % -20
ECQM : Polyester	50 : 50V 05 : 50V	J : $\pm 5\%$
ECQP : Polypropylene	2H : 500V 2A : 100V	G : $\pm 2\%$
ECG : Ceramic	1 : 100V 1J : 63V	F : $\pm 1\%$
ECEA N : Non Polar Electrolytic	KC : 400V AC	C : $\pm 0.25pF$
QCU : Ceramic (Chip Type)	KC : 125V AC	D : $\pm 0.5pF$
ECUX : Ceramic (Chip Type)	(UL)	
ECF : Semiconductor		
EECW : Liquid electrolyte double layer capacitor		

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)			R134	ERDS2TJ822	8.2K 1/4	R316	ERDS2TJ393	39K 1/4
R1	ERDS2TJ104	100K 1/4	R135	ERDS2TJ333	33K 1/4	R317	ERDS2TJ274	270K 1/4
R2	ERDS2TJ273	27K 1/4	R136	ERDS2TJ684	680K 1/4	R318	ERDS2TJ104	100K 1/4
R4	ERDS2TJ104	100K 1/4	R137	ERDS2TJ473	47K 1/4	R319	ERDS2TJ102	1K 1/4
R5	ERDS2TJ104	100K 1/4	R165	ERDS2TJ154	150K 1/4	R320	ERDS2TJ123	12K 1/4
R6	ERDS2TJ823	82K 1/4	R166	ERDS2TJ184	180K 1/4	R321	ERDS2TJ183	18K 1/4
R7	ERDS2TJ103	10K 1/4	R167	ERDS2TJ223	22K 1/4	R322	ERDS2TJ393	39K 1/4
R8	ERDS2TJ100	10 1/4	R168	ERDS2TJ223	22K 1/4	R323	ERDS2TJ332	3.3K 1/4
R9	ERDS2TJ104	100K 1/4	R169	ERDS2TJ683	68K 1/4	R324	ERDS2TJ332	3.3K 1/4
R10	ERDS2TJ820	82 1/4	R170	ERDS2TJ473	47K 1/4	R325	ERDS2TJ333	33K 1/4
R11	ERDS2TJ820	82 1/4	R172	ERDS2TJ103	10K 1/4	R326	ERDS2TJ333	33K 1/4
R12	ERDS2TJ101	100 1/4	R173	ERDS2TJ223	22K 1/4	R327	ERDS2TJ223	22K 1/4
R101	ERDS2TJ820	82 1/4	R174	ERDS2TJ473	47K 1/4	R328	ERDS2TJ223	22K 1/4
R102	ERDS2TJ472	4.7K 1/4	R177	ERDS2TJ563	56K 1/4	R329	ERDS2TJ101	100 1/4
R103	ERDS2TJ331	330 1/4	R179	ERDS2TJ222	2.2K 1/4	R330	ERDS2TJ101	100 1/4
R104	ERDS2TJ562	5.6K 1/4	R180	ERDS2TJ564	560K 1/4	R331	ERDS2TJ102	1K 1/4
R105	ERDS2TJ331	330 1/4	R181	ERDS2TJ331	330 1/4	R332	ERDS2TJ102	1K 1/4
R106	ERDS2TJ331	330 1/4	R182	ERDS2TJ563	56K 1/4	R333	ERDS2TJ331	330 1/4
R107	ERDS2TJ561	560 1/4	R184	ERDS2TJ471	470 1/4	R334	ERDS2TJ331	330 1/4
R108	ERDS2TJ123	12K 1/4	R201	ERDS2TJ473	47K 1/4	R335	ERDS2TJ332	3.3K 1/4
R109	ERDS2TJ103	10K 1/4	R202	ERDS2TJ222	2.2K 1/4	R336	ERDS2TJ332	3.3K 1/4
R110	ERDS2TJ472	4.7K 1/4	R203	ERDS2TJ563	56K 1/4	R337	ERDS2TJ332	3.3K 1/4
R111	ERDS2TJ331	330 1/4	R204	ERDS2TJ222	2.2K 1/4	R338	ERDS2TJ332	3.3K 1/4
R113	ERDS2TJ221	220 1/4	R205	ERDS2TJ101	100 1/4	R341	ERDS2TJ104	100K 1/4
R115	ERDS2TJ681	680 1/4	R206	ERDS2TJ473	47K 1/4	R342	ERDS2TJ104	100K 1/4
R116	ERDS2TJ332	3.3K 1/4	R208	ERDS2TJ104	100K 1/4	R343	ERDS2TJ273	27K 1/4
R117	ERDS2TJ332	3.3K 1/4	R209	ERDS2TJ102	1K 1/4	R344	ERDS2TJ334	330K 1/4
R118	ERDS2TJ332	3.3K 1/4	R210	ERDS2TJ822	8.2K 1/4	R345	ERDS2TJ473	47K 1/4
R119	ERDS2TJ331	330 1/4	R211	ERDS2TJ473	47K 1/4	R346	ERDS2TJ104	100K 1/4
R120	ERDS2TJ102	1K 1/4	R212	ERDS2TJ101	100 1/4	R349	ERDS2TJ104	100K 1/4
R121	ERDS2TJ102	1K 1/4	R213	ERDS2TJ473	47K 1/4	R351	ERDS2TJ393	39K 1/4
R122	ERDS2TJ331	330 1/4	R251	ERDS2TJ103	10K 1/4	R353	ERDS2TJ561	560 1/4
R123	ERDS2TJ272	2.7K 1/4	R252	ERDS2TJ182	1.8K 1/4	R357	ERDS2TJ102	1K 1/4
R124	ERDS2TJ331	330 1/4	R253	ERDS2TJ223	22K 1/4	R359	ERDS1FJ121	120 1/2
R125	ERDS2TJ103	10K 1/4	R254	ERDS2TJ182	1.8K 1/4	R361	ERDS2TJ184	180K 1/4
R126	ERDS2TJ472	4.7K 1/4	R255	ERDS2TJ473	47K 1/4	R362	ERDS1FJ121	120 1/2
R129	ERDS2TJ392	3.9K 1/4	R309	ERDS2TJ101	100 1/4	R364	ERDS2TJ473	47K 1/4
R130	ERDS2TJ221	220 1/4	R310	ERDS2TJ274	270K 1/4	R704	ERDS2TJ101	100 1/4
R131	ERDS2TJ101	100 1/4	R311	ERDS2TJ472	4.7K 1/4	R707	ERDS2TJ222	2.2K 1/4
R132	ERDS2TJ104	100K 1/4	R312	ERDS2TJ274	270K 1/4	R708	ERDS2TJ222	2.2K 1/4
R133	ERDS2TJ182	1.8K 1/4	R314	ERDS2TJ683	68K 1/4	R710	ERDS2TJ391	390 1/4
			R315	ERDS2TJ393	39K 1/4	R711	ERDS2TJ472	4.7K 1/4

Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.	Ref. No.	Part No.	Value.
R713	ERDS2TJ101	100 1/4	C102	ECKD1H103PF	0.01 50	C314	ECKD1H103PF	0.01 50
R714	ERDS2TJ101	100 1/4	C103	ECBT1H102KB5	0.001 50	C315	ECQP1391JZ	390P 100
R715	ERDS2TJ470	47 1/4	C104	ECEA1HKR22	0.22 50	C317	ECFTD104KXL	0.1 25
R716	ERDS2TJ470	47 1/4	C105	ECKD1H103PF	0.01 50	C318	ECKD1H103PF	0.01 50
R901	ERDS2TJ682	6.8K 1/4	C106	ECKD1H103PF	0.01 50	C319	ECEA1CKS100	10 16
R902	ERDS2TJ123	12K 1/4	C107	ECKD1H103PF	0.01 50	C320	ECEA1VK100B	10 35
R903	ERDS2TJ102	1K 1/4	C108	ECKD1H103PF	0.01 50	C323	ECKD1H223PF	0.022 50
R904	ERDS2TJ681	680 1/4	C109	ECKD1H103PF	0.01 50	C324	ECQM1H332JZ	0.0033 50
R906	ERDS2TJ472	4.7K 1/4	C110	ECKD1H103PF	0.01 50	C701	ECKD2H102ZF	0.001 500
R908	ERDS2TJ123	12K 1/4	C111	ECKD1H103PF	0.01 50	C702	ECKD1H103PF	0.01 50
R911	ERDS2TJ102	1K 1/4	C112	ECKD1H103PF	0.01 50	C703	ECKD2H102ZF	0.001 500
R912	ERDS2TJ102	1K 1/4	C113	ECKD1H103PF	0.01 50	C704	ECEA1CU222	2200 16
R913	ERDS2TJ104	100K 1/4	C114	ECBT1H102KB5	0.001 50	C705	ECEA1CU222	2200 16
R914	ERDS2TJ104	100K 1/4	C115	ECEA1HKR22	0.22 50	C707	ECEA1HKR47	0.47 50
R915	ERDS2TJ104	100K 1/4	C117	ECEA1VK100B	10 35	C708	ECEA1CU221	220 16
R916	ERDS2TJ104	100K 1/4	C118	ECEA50V330V	330 50	C710	ECKD1H103PF	0.01 50
R917	ERDS2TJ681	680 1/4	C119	ECQM1H223JZ	0.022 50	C711	ECEA1VU470	47 35
R918	ERDS2TJ103	10K 1/4	C120	ECQM1H122JZ	0.0012 50	C712	ECEA0JU101	100 6.3
R919	ERDS2TJ103	10K 1/4	C121	RCBS1H180JCY	18P 50	C713	ECEA1VU101	100 35
R920	ERDS2TJ104	100K 1/4	C122	ECQM1H122JZ	0.0012 50	C714	ECKD2H102ZF	0.001 500
R921	ERDS2TJ103	10K 1/4	C123	ECKD1H103PF	0.01 50	C715	ECEA1VU101	100 35
R922	ERDS2TJ105	1M 1/4	C124	ECKD1H103PF	0.01 50	C716	ECEA1VK100B	10 35
R923	ERDS2TJ102	1K 1/4	C125	RCBS1H6R8KCY	6.8P 50	C717	ECEA1VK3R3	3.3 35
R924	ERDS2TJ102	1K 1/4	C127	ECEA0JU101	100 6.3	C718	ECEA1VU470	47 35
R925	ERDS2TJ104	100K 1/4	C128	ECEA1HKR22	0.22 50	C719	ECEA1VU470	47 35
R926	ERDS2TJ104	100K 1/4	C129	ECKD1H103PF	0.01 50	C720	ECKD2H102ZF	0.001 500
R927	ERDS2TJ473	47K 1/4	C130	ECQM1H223JZ	0.022 50	C721	ECKD2H102ZF	0.001 500
R928	ERDS2TJ473	47K 1/4	C149	ECKD1H103PF	0.01 50	C722	ECEA0JU471	470 6.3
R929	ERDS2TJ153	15K 1/4	C150	ECKD1H103PF	0.01 50	C902	ECQM1H223JZ	0.022 50
R930	ERDS2TJ181	180 1/4	C152	ECFTD104KXL	0.1 25	C903	ECKD1H223PF	0.022 50
R931	ERDS2TJ471	470 1/4	C153	ECBT1H102KB5	0.001 50	C904	ECKD1H103PF	0.01 50
R932	ERDS2TJ181	180 1/4	C154	RCBS1H390JLY	39P 50	C905	ECEA25M4R7R	4.7 25
R933	ERDS2TJ221	220 1/4	C156	ECBT1H102KB5	0.001 50	C911	RCBS1H180JCY	18P 50
R951	ERDS2TJ102	1K 1/4	C157	RCBS1H180JCY	18P 50	C912	RCBS1H150JCY	15P 50
R952	ERDS2TJ332	3.3K 1/4	C158	RCBC1H470JLY	47P 50	C913	RCBC1H101KBY	100P 50
R953	ERDS2TJ123	12K 1/4	C201	ECKD1H103PF	0.01 50	C914	ECEA0JU471	470 6.3
CAPACITORS(VALUE,VOLTAGE)			C202	ECEA0JK330	33 6.3	C915	ECBT1H102KB5	0.001 50
C1	ECEA1VK3R3	3.3 35	C203	ECKD1H103PF	0.01 50	C916	ECEA1VK100B	10 35
C2	ECBT1H102KB5	0.001 50	C204	ECEA1HKR47	0.47 50	C917	ECEA0JU101	100 6.3
C3	ECBT1H102KB5	0.001 50	C205	ECEA0JK330	33 6.3	C918	ECEA0JS102	1000 6.3
C4	RCBS1H6R8KCY	6.8P 50	C206	ECKD1H223PF	0.022 50	C919	ECKD1H103PF	0.01 50
C8	ECCT1H030CC	3P 50	C208	ECKD1H473ZF	0.047 50	C921	ECEA0JU222	2200 6.3
C9	RCBS1H180MCM	1P 50	C209	RCBS1H220JCY	22P 50	C922	RCBC1H101KBY	100P 50
C10	ECKD1H102MDL	0.001 50	C210	ECQP1471JZ	470P 125	C923	RCBC1H101KBY	100P 50
C11	RCBS1H100JCY	10P 50	C211	ECKD1H223PF	0.022 50	C924	RCBC1H101KBY	100P 50
C12	ECBT1H102KB5	0.001 50	C212	ECKD1H103PF	0.01 50	C925	RCBC1H101KBY	100P 50
C13	RCBC1H2R7KCY	2.7P 50	C213	ECKD1H103PF	0.01 50	C926	RCBC1H101KBY	100P 50
C15	ECBT1H102KB5	0.001 50	C251	ECQP1391JZ	390P 100	C927	RCBC1H101KBY	100P 50
C16	ECQM1H223JZ	0.022 50	C304	ECEA1HKR22	0.22 50	C928	RCBC1H101KBY	100P 50
C17	ECKD1H103PF	0.01 50	C305	ECQM1H183JZ	0.018 50	C929	ECEA1VK3R3	3.3 35
C18	ECEA1VK100B	10 35	C307	ECEA1HKR22	0.22 50	C930	ECKD1H103PF	0.01 50
C19	ECBT1H102KB5	0.001 50	C308	ECQB1H153JZ	0.015 50	C931	ECEA1HKR47	0.47 50
C21	RCBS1H1R5MCM	1.5P 50	C309	ECQB1H153JZ	0.015 50	C934	RCBC1H101KBY	100P 50
C22	ECQM1H223JZ	0.022 50	C310	ECEA1VK3R3	3.3 35	C935	RCBC1H101KBY	100P 50
C23	ECKD1H103PF	0.01 50	C311	ECEA1VK100B	10 35	C936	ECEA0JK330	33 6.3
C101	ECKD1H103PF	0.01 50	C312	ECEA1AU101	100 10	C937	ECEA1VK100B	10 35
			C313	ECEA1HKR47	0.47 50	C951	ECKD1H103PF	0.01 50
						C952	ECEA1HK010	1 50

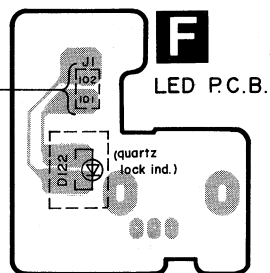
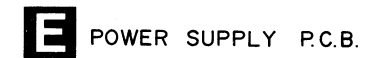
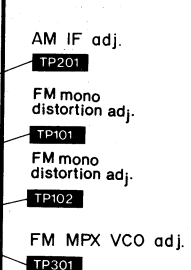
REPLACEMENT PARTS LIST

Notes : * Important safety notice :
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* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

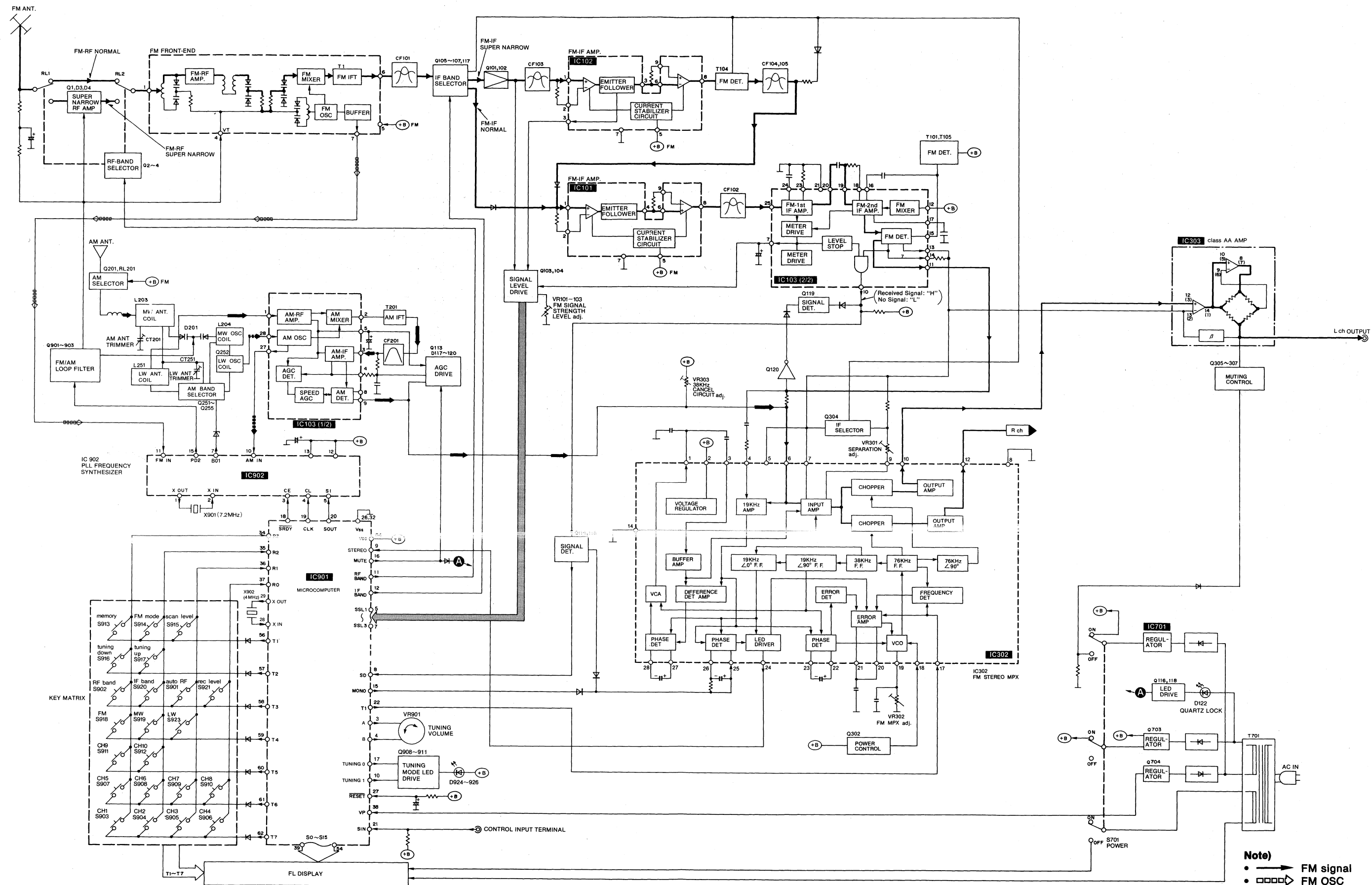
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
INTEGRATED CIRCUITS			D119	MA165	DIODE
IC101	AN278	I.C.IF AMP	D120	MA4043M	DIODE
IC102	AN278	I.C.IF AMP	D121	MA165	DIODE
IC103	AN7274NS	I.C.FM IF AMP	D122	LN014314P	DIODE
IC302	AN7472S	I.C.MPX	D123	MA165	DIODE
IC303	AN6554F	I.C.CLASS AA AMP	D124	MA165	DIODE
IC701	AN78M12	I.C.REGULATOR	D125	MA165	DIODE
IC901	M50941-421SP	I.C.MICRO COMPUTER	D126	MA165	DIODE
IC902	LM7001	I.C.PLL	D127	MA165	DIODE
TRANSISTORS			D128	MA165	DIODE
Q1	3SK74L1	TRANSISTOR	D129	MA165	DIODE
Q2	DTA114YSTP	TRANSISTOR	D201	SVC342LMTP	DIODE
Q3	DTA114YSTP	TRANSISTOR	D202	MA165	DIODE
Q4	DTC144A	TRANSISTOR	D302	MA4062M	DIODE
Q101	2SC2786M	TRANSISTOR	D305	MA165	DIODE
Q102	2SC2786M	TRANSISTOR	D701	 SVD1SR35200A	RECTIFIER
Q103	2SC3311A-Q	TRANSISTOR	D702	 SVD1SR35200A	RECTIFIER
Q104	2SC3311A-Q	TRANSISTOR	D703	MA167	DIODE
Q105	DTC144A	TRANSISTOR	D704	MA167	DIODE
Q106	DTA114YSTP	TRANSISTOR	D705	MA4062M	DIODE
Q107	DTA114YSTP	TRANSISTOR	D708	MA4056-M	DIODE
Q108	DTA114YSTP	TRANSISTOR	D709	MA167	DIODE
Q109	2SC3311A-Q	TRANSISTOR	D710	MA167	DIODE
Q113	DTC144A	TRANSISTOR	D711	MA4270	DIODE
Q114	DTC144A	TRANSISTOR	D902	MA165	DIODE
Q115	2SC3311A-Q	TRANSISTOR	D903	MA165	DIODE
Q116	2SC3311A-Q	TRANSISTOR	D904	MA165	DIODE
Q117	2SA1309A-R	TRANSISTOR	D905	MA165	DIODE
Q118	2SC3311A-Q	TRANSISTOR	D906	MA165	DIODE
Q119	2SC3311A-Q	TRANSISTOR	D907	MA165	DIODE
Q120	2SC3311A-Q	TRANSISTOR	D908	MA165	DIODE
Q201	2SA1309A-R	TRANSISTOR	D909	MA165	DIODE
Q251	2SA1309A-R	TRANSISTOR	D910	MA165	DIODE
Q252	2SC3311A-Q	TRANSISTOR	D911	MA165	DIODE
Q253	2SC3311A-Q	TRANSISTOR	D912	MA165	DIODE
Q254	2SC3311A-Q	TRANSISTOR	D913	MA4030M	DIODE
Q255	DTA114YSTP	TRANSISTOR	D914	MA700AT	DIODE
Q302	DTA114YSTP	TRANSISTOR	D915	MA165	DIODE
Q304	2SC3311A-Q	TRANSISTOR	D916	MA165	DIODE
Q305	2SD1450TTA	TRANSISTOR	D917	MA165	DIODE
Q306	2SD1450TTA	TRANSISTOR	D918	MA165	DIODE
Q307	2SA1309A-R	TRANSISTOR	D919	MA165	DIODE
Q703	2SD592ANCQ	TRANSISTOR	D921	MA165	DIODE
Q704	2SA1309A-R	TRANSISTOR	D922	MA165	DIODE
Q901	2SA1309A-R	TRANSISTOR	D923	MA165	DIODE
Q902	2SC1310EFG	TRANSISTOR	D924	LN031306P1	DIODE
Q903	2SC1310EFG	TRANSISTOR	D925	LN031306P1	DIODE
Q907	DTC144A	TRANSISTOR	D926	LN031306P1	DIODE
Q908	DTC114YSTP	TRANSISTOR	D927	MA4062M	DIODE
Q909	DTC114YSTP	TRANSISTOR	D928	MA4062M	DIODE
Q910	2SC3311A-Q	TRANSISTOR	VARIABLE RESISTORS		
Q911	DTC114YSTP	TRANSISTOR	VR101	EVND4AA00B15	V.R.FM SIGNAL
Q951	2SC3311A-Q	TRANSISTOR	VR102	EVND4AA00B15	V.R.FM SIGNAL
Q952	2SC3311A-Q	TRANSISTOR	VR103	EVND4AA00B15	V.R.FM SIGNAL
DIODES			VR105	EVND4AA00B14	V.R.FM.IF NARROW
D1	MA165	DIODE	VR301	EVND4AA00B15	V.R.SEPARATION
D3	1SV103B2	DIODE	VR302	EVND4AA00B14	V.R.MPX VCO
D4	1SV103B2	DIODE	VR303	EVND4AA00B55	V.R.19KHZ CANCEL
D5	MA165	DIODE	VR901	EVQWX9S2512B	V.R.TUNING
D101	MA700AT	DIODE	VARIABLE CAPACITORS		
D102	MA700AT	DIODE	CT251	SVCTZ03R200F	TRIMMER
D103	MA165	DIODE	THERMISTORS AND VARISTORS		
D104	MA165	DIODE	TH1	ERTD2ZHL333S	THERMISTOR
D105	MA700AT	DIODE	TH101	ERTD2ZHL332S	THERMISTOR
D106	MA700AT	DIODE	TH102	ERTD2ZHL332S	THERMISTOR
D107	MA165	DIODE	TH103	ERTD2ZHL333S	THERMISTOR
D108	MA165	DIODE	COILS AND TRANSFORMERS		
D116	MA165	DIODE	CT201	SVCTZ03T110F	TRIMMER
D117	MA165	DIODE	L2	SLA4P81	FM ANT COIL
D118	MA165	DIODE	L3	SLQAN40G1-P	CHOKO COIL

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
L4	SLD4P81	COIL	FRONT PACKS		
L101	RLQZP3R3KT-Y	COIL	FE	SNVFE407G29	FRONT END PACK
L106	RLQZP101KT-Y	COIL	FUSES		
L203	SLA2B3-P	ANTENNA COIL	F1	 XBA2C06TB0	FUSE 250V, T600mA
L204	SL02B9R-P	OSCILLATOR COIL	SWITCHES		
L251	SLA1B7R-P	ANTENNA COIL	S701	 SSH1234	POWER SW
L252	SL01B5-P	OSCILLATOR COIL	S901	SSG13	SW.AUTO RF
L304	RLQZPR47KT-Y	CHOKO COIL	S902	SSG13	SW.FM RF BAND
L305	RLQZPR47KT-Y	CHOKO COIL	S903	SSG13	SW.CH1
L901	RLQZP3R3KT-Y	COIL	S904	SSG13	SW.CH2
L902	RLQZP3R3KT-Y	COIL	S905	SSG13	SW.CH3
L903	RLQZPR22KT-Y	COIL	S906	SSG13	SW.CH4
T101	SLI4B520-Z	I.F. TRANSFORMER	S907	SSG13	SW.CH5
T104	SLI4B108-Z	I.F. TRANSFORMER	S908	SSG13	SW.CH6
T105	SLI4B521-Z	I.F. TRANSFORMER	S909	SSG13	SW.CH7
T201	SLI2B103-M	I.F. TRANSFORMER	S910	SSG13	SW.CH8
T701	 SLT5K248	POWER TRANSFORMER	S911	SSG13	SW.CH9
(EW.EF.EB)			S912	SSG13	SW.CH0
T701	 SLT5K249	POWER TRANSFORMER	S913	SSG13	SW.MEMORY
(EK)			S914	SSG13	SW.FM MODE
FILTERS			S915	SSG13	SW.SCAN LEVEL SW
CF101	SVFE107MX2-L	CERAMIC FILTER	S916	SSG13	SW.DOWN
CF102	SVFE107MX2-L	CERAMIC FILTER	S917	SSG13	SW.UP
CF103	SVFE107MX2-L	CERAMIC FILTER	S918	SSG13	SW.FM
CF104	SVFE107M22-L	CERAMIC FILTER	S919	SSG13	SW.AM
CF105	SVFE107M22-L	CERAMIC FILTER	S920	SSG13	SW.FM IF BAND
CF201	SVFSFP450HT	CERAMIC FILTER	S922	SSG13	SW.TUNING MODE
OSCILLATORS			S923	SSG13	SW.LOW BAND
X901	SVQ49U722-S	CRYSTAL OSCILLATOR	RELAYS		
X902	EF0FC4004A4	CERAMIC FILTER	RL1	SFDYG5A237P	RELAY
DISPLAYS			RL2	SFDYG5A237P	RELAY
FL	SAD7MT832K	DISPLAY TUBE	RL201	SFDYG5A237P	RELAY

A vertical scale bar with six horizontal tick marks. The tick marks are labeled A, B, C, D, E, and F from top to bottom.



BLOCK DIAGRAM

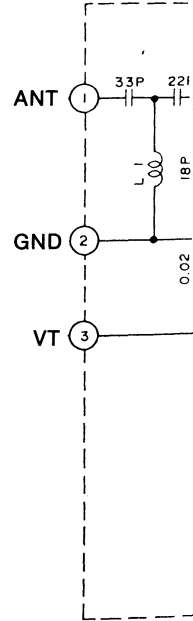


SCHEMATIC

(This schematic diagram represents the development of new technology)

- Note 1:**
- **S701** : Power switch
 - **S901** : FM RF-band (set freq)
 - **S902** : FM RF-band (normal ↔ s)
 - **S903~S912**: Preset tuning
 - S903: CH1,
 - S906: CH4,
 - S909: CH7,
 - S912: CH0
 - **S913** : Memory switch
 - **S914** : FM mode select (auto ↔ mon)
 - **S915** : Scan level select
 - **S916, S917**: Memory search
 - S916: down,
 - **S918, S919, S923** : Band select
 - S918: FM, S
 - **S920** : FM IF band select
 - **S922** : Tuning mode
- Indicated voltage values are measured by the DC electronic voltmeter (high-impedance) with the receiver in reception mode. Therefore, there may exist differences depending on the internal components. All voltage values shown in this schematic are for (no signal) reception mode.
- * Figures in () stand for reception mode.
 - * Figures in [] stand for reception mode.
 - * Figures in < > stand for reception mode.
 - * Figures in < > stand for reception mode.

FM Tuner Pack (S)



- Note)**
- FM signal
 - FM OSC
 - MW (LW) signal
 - MW (LW) OSC

SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Note 1:

- **S701** : Power switch in "ON" position.
- **S901** : FM RF-band automatic-selector (auto RF).
($\blacksquare$ set freq. only/ $\blacksquare$ all preset ch)
- **S902** : FM RF-band selector (RF band).
(normal $\leftrightarrow$ super narrow)
- **S903~S912** : Preset tuning switch.
S903: CH1, S904: CH2, S905: CH3
S906: CH4, S907: CH5, S908: CH6
S909: CH7, S910: CH8, S911: CH9
S912: CH0
- **S913** : Memory switch. (memory).
- **S914** : FM mode selector (FM mode).
(auto $\leftrightarrow$ mono)
- **S915** : Scan level selector (scan level).
- **S916, S917** : Memory search switch (memory search).
S916: down, S917: up

- **S918, S919, S923** : Band selectors.
S918: FM, S919: MW, S923: LW
- **S920** : FM IF band selector (IF band).
- **S922** : Tuning mode selector (auto $\leftrightarrow$ manual $\leftrightarrow$ lock).
- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester. All voltage values shown in circuitry are DC voltage in FM signal (no signal) reception modes.

* Figures in () stand for DC voltage in AM signal reception mode.

* Figures in $\square$ stand for DC voltage in LW signal reception mode.

* Figures in $\square$ stand for muting mode.

* Figures in $\langle \rangle$ stand for RF band "super narrow" mode.

* Figures in $\langle \rangle$ stand for IF band "super narrow" mode.

- Positive voltage lines
- FM OSC
- MW (LW) OSC
- ▬ IF super narrow signal
- ▬ Pilot signal
- ▬ AF signal lines
- ▬ FM signal
- ▬ MW (LW) signal
- ▬ RF super narrow signal

Important safety notice.

Components identified by Δ mark have special characteristics important for safety.

When replacing any of these components, use only manufacturer's specified parts.

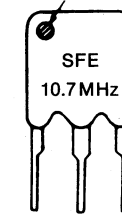
Note 2:

Use of ceramic filters in pairs

The ceramic filters (CF101~CF105) for FM-IF circuit are available in three versions. For this circuit, be sure to use the ceramics of the same version in a pair.

At repairing and replacement, pay close attention to the diodes (D921, D922) for use as different diodes must be used depending on each version of the ceramic filters.

Color marking
(Red, Black, Blue or Orange)



VERSION (Color)	D921	D922
Red	x	x
Black	○	x
Blue	x	○
Orange	○	○

Note: ○ mark: Diode is used.
x mark: Diode is not used.

* Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

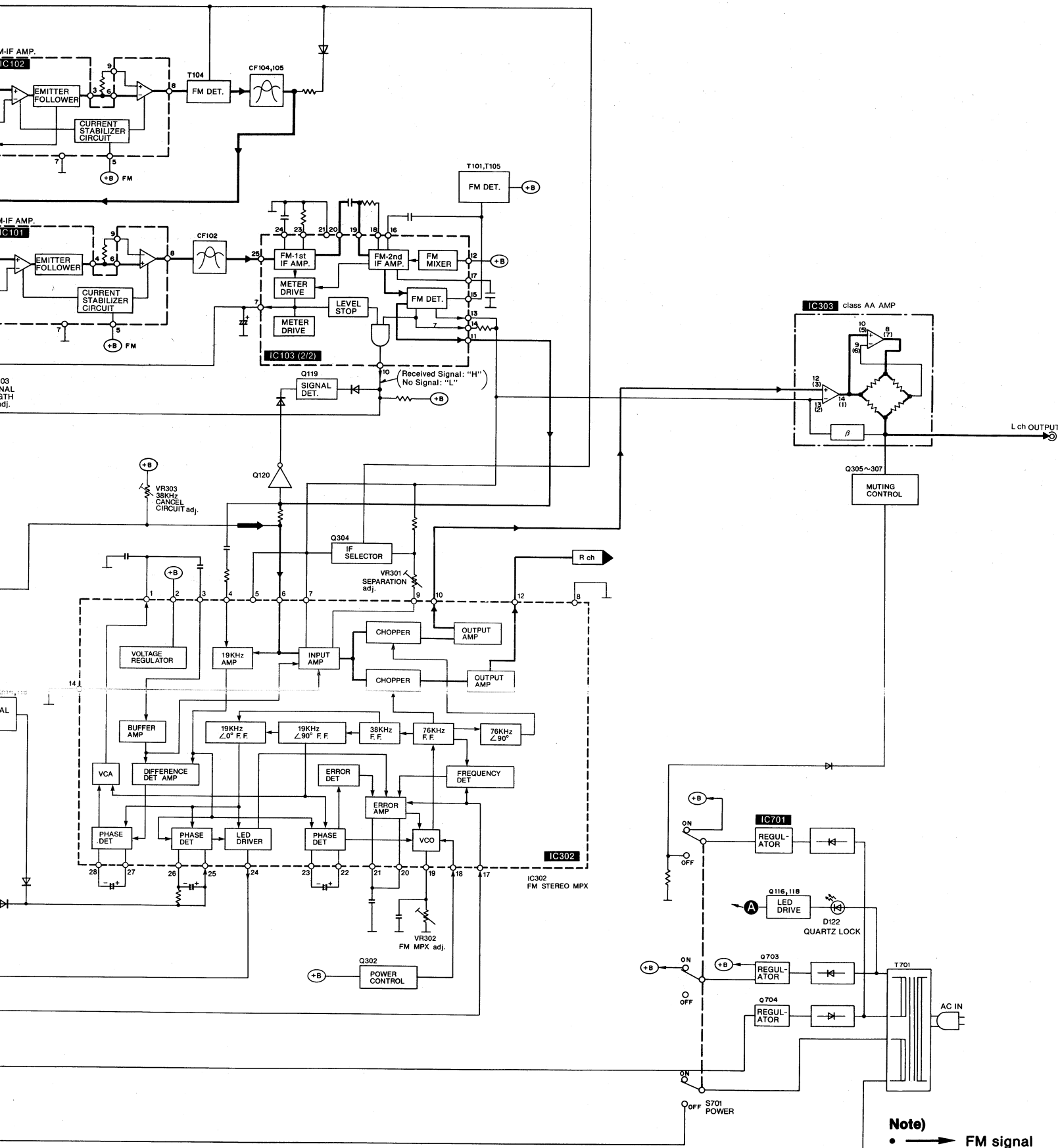
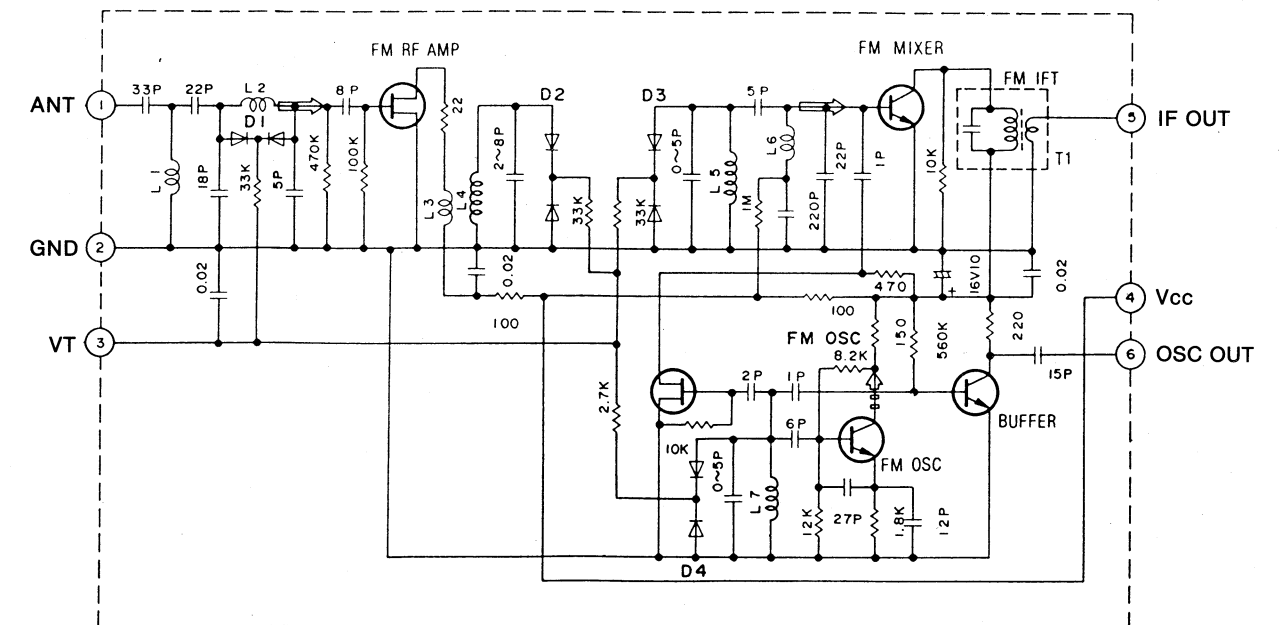
• Cover the parts boxes made of plastics with aluminum foil.

• Ground the soldering iron.

• Put a conductive mat on the work table.

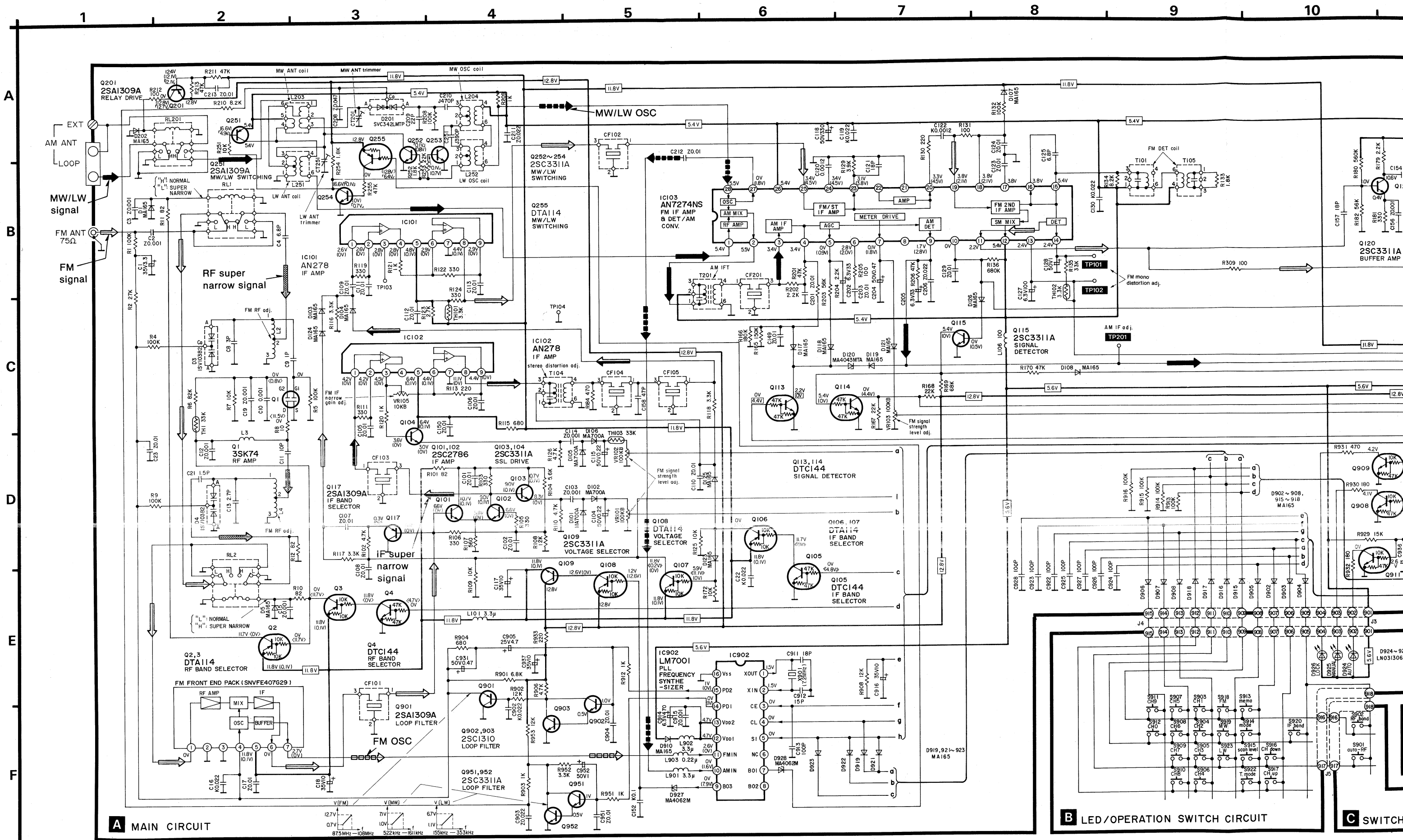
• Do not touch the legs of IC or LSI with the fingers directly.

FM Tuner Pack (SNVFE407G29)



Note)

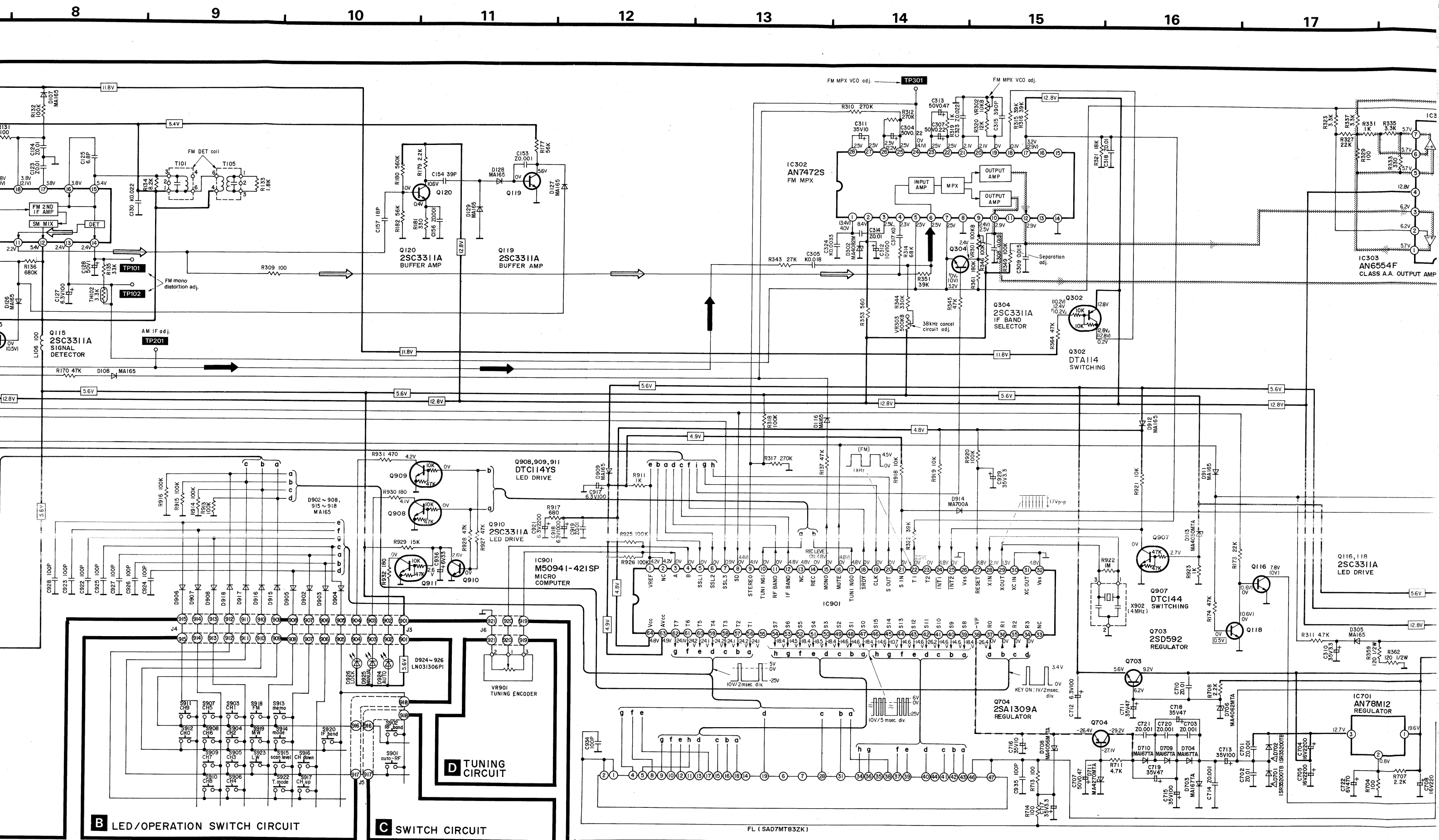
- FM signal
- □ FM OSC
- ■ MW (LW) signal
- ■ MW (LW) OSC

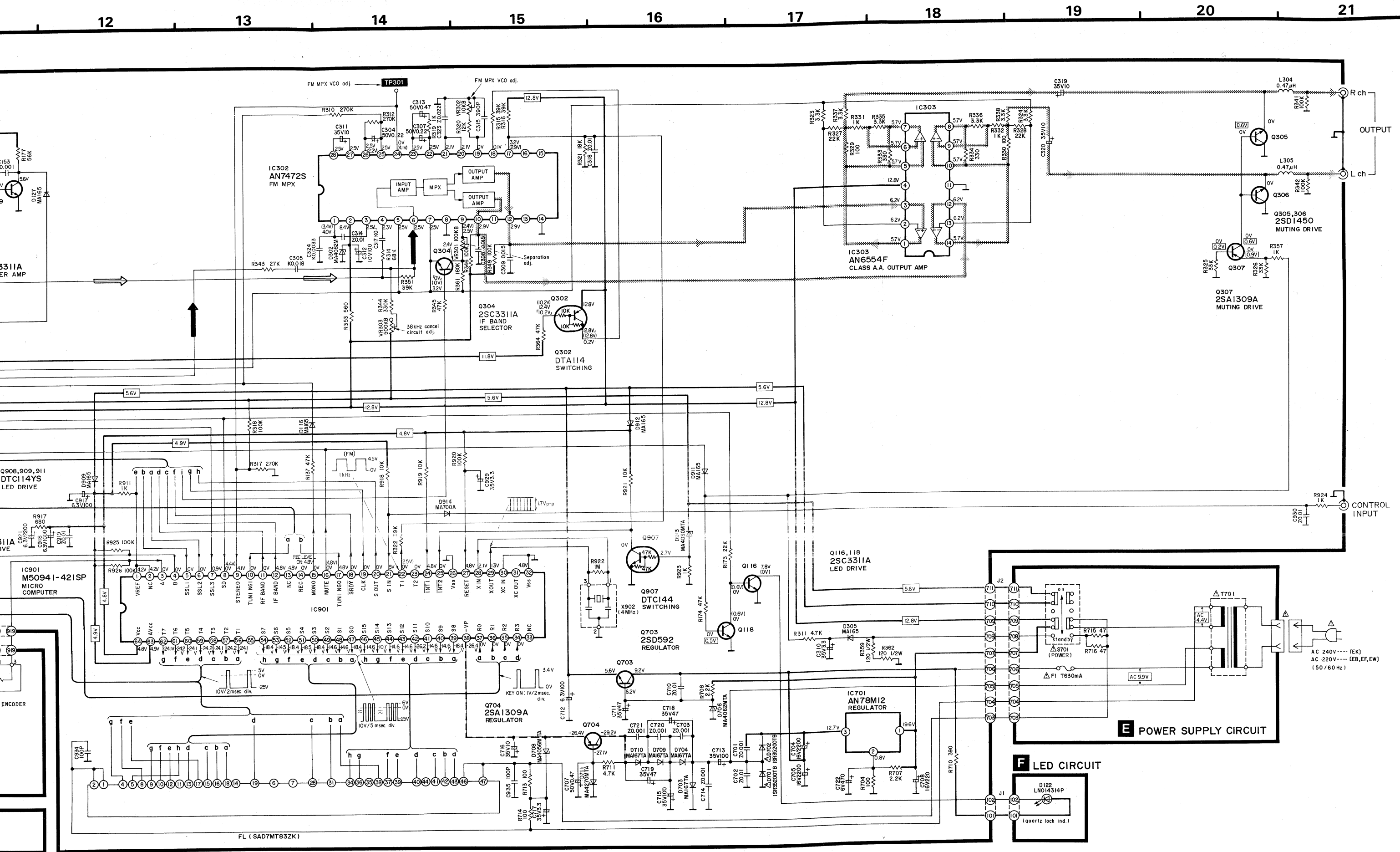


A MAIN CIRCUIT

B LED/OPERATION SWITCH CIRCUIT

C SWITCH CIRCUIT

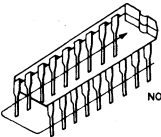




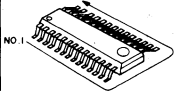
E POWER SUPPLY CIRCUIT

F LED CIRCUIT

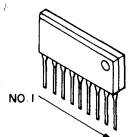
■ TERMINAL GUIDE OF IC'S,
TRANSISTORS AND DIODES



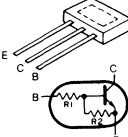
LM7001	16 Pin
AN6554F	14 Pin
M50941-421SP	64 Pin



AN7274NS	28 Pin
AN7472S	

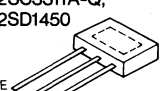


AN278	9 Pin
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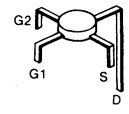


DTC144A



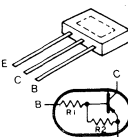


2SA1309A-S,
2SC2786M,
2SC3311A-Q,
2SD1450



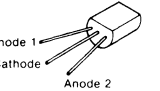
3SK74L1





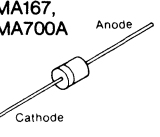
DTA114ESTP



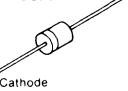


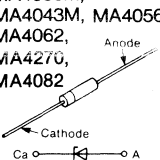
SVC342LMTP,
1SV103B2



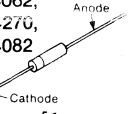


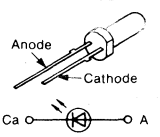
1SR35200, MA165,
MA167,
MA700A



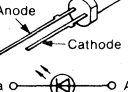


MA4030M,
MA4043M, MA4056,
MA4062,
MA4270,
MA4082



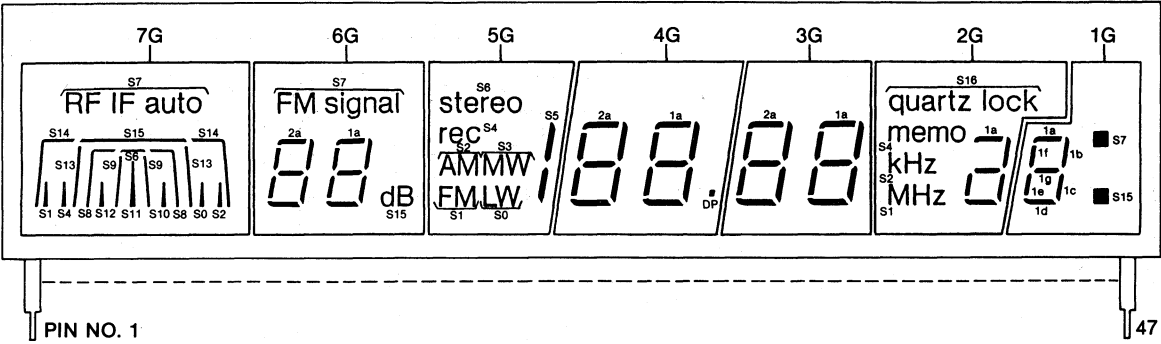


LN014314P
LN031306P1



■ DESCRIPTION OF FL PANEL

• GRID ASSIGNMENT

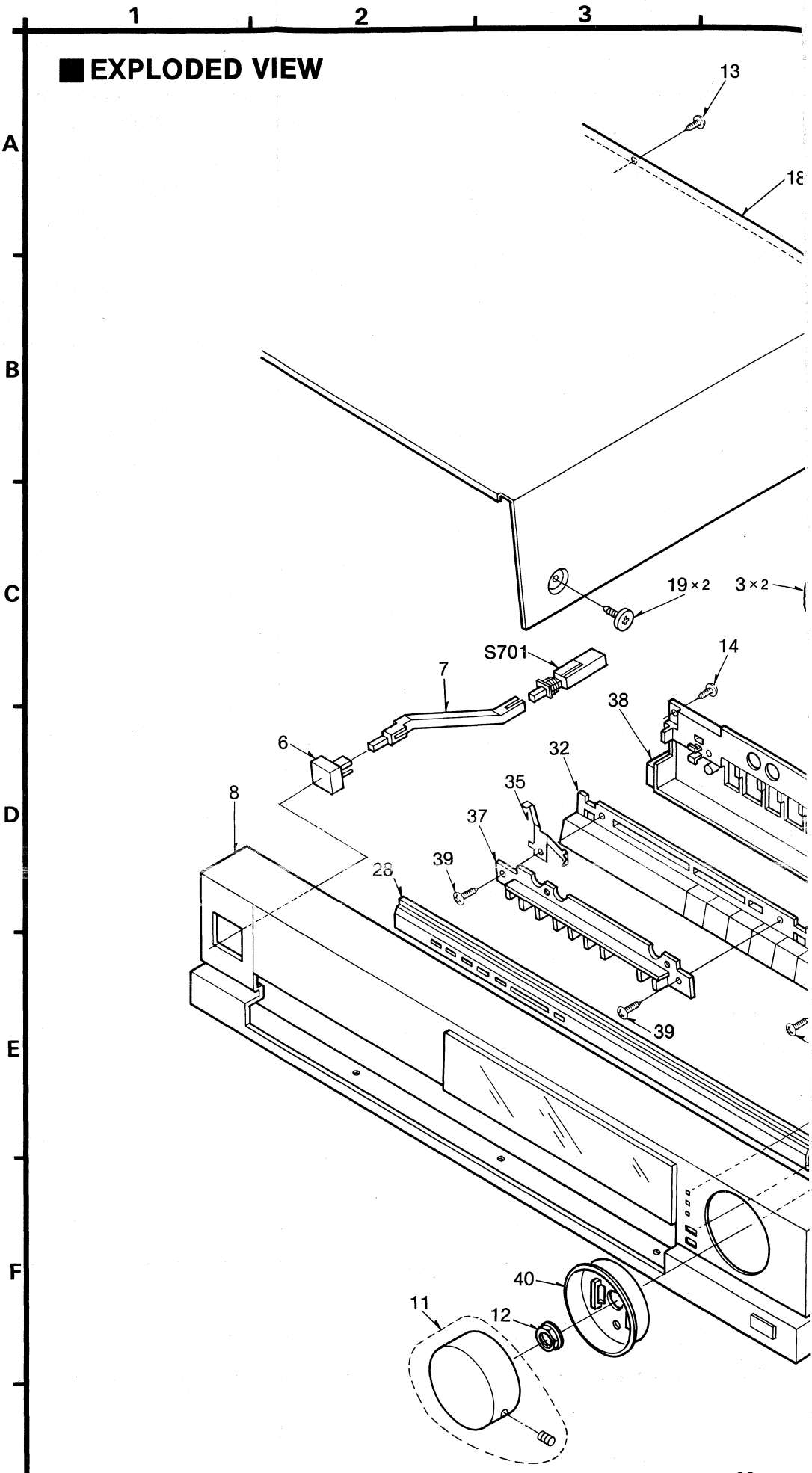


PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
CONNECT-ION	N P	F 1	N P	7 G	S 8	S 9	S 10	S 11	S 12	7 G	S 13	S 14	6 G	S 15	N P	N P	6 G	N P	N P	5 G	N P	N P	N P	N P
PIN NO.	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
CONNECT-ION	N P	N P	N P	N P	4 G	S 0	3 G	S 1	S 2	3 G	S 3	S 4	2 G	S 5	S 6	2 G	S 16	1 G	S 7	1 G	N P	F 2	N P	

• ANODE ASSIGNMENT

	7G	6G	5G	4G	3G	2G	1G
S0	I	2d	LW	2d	2d	-	-
S1	I	2e	FM	2e	2e	MHz	-
S2	I	2c	AM	2c	2c	kHz	-
S3	-	2g	MW	2g	2g	-	-
S4	I	2f	rec	2f	2f	memo	-
S5	-	2b	/	2b	2b	-	-
S6	—	2a	stereo	2a	2a	-	-
S7	RF IF auto	FM signal	-	-	-	-	■
S8	┐└	1d	-	1d	1d	1d	1d
S9	/ \	1e	-	1e	1e	1e	1e
S10	I	1c	-	1c	1c	1c	1c
S11	I	1g	-	1g	1g	1g	1g
S12	I	1f	-	1f	1f	-	1f
S13	/ \	1b	-	1b	1b	1b	1b
S14	┐└	1a	-	1a	1a	1a	1a
S15	—	dB	-	DP	-	-	■
S16	-	-	-	-	-	quartz lock	-

■ EXPLODED VIEW



EXPLODED VIEW

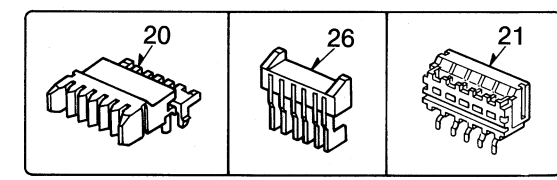
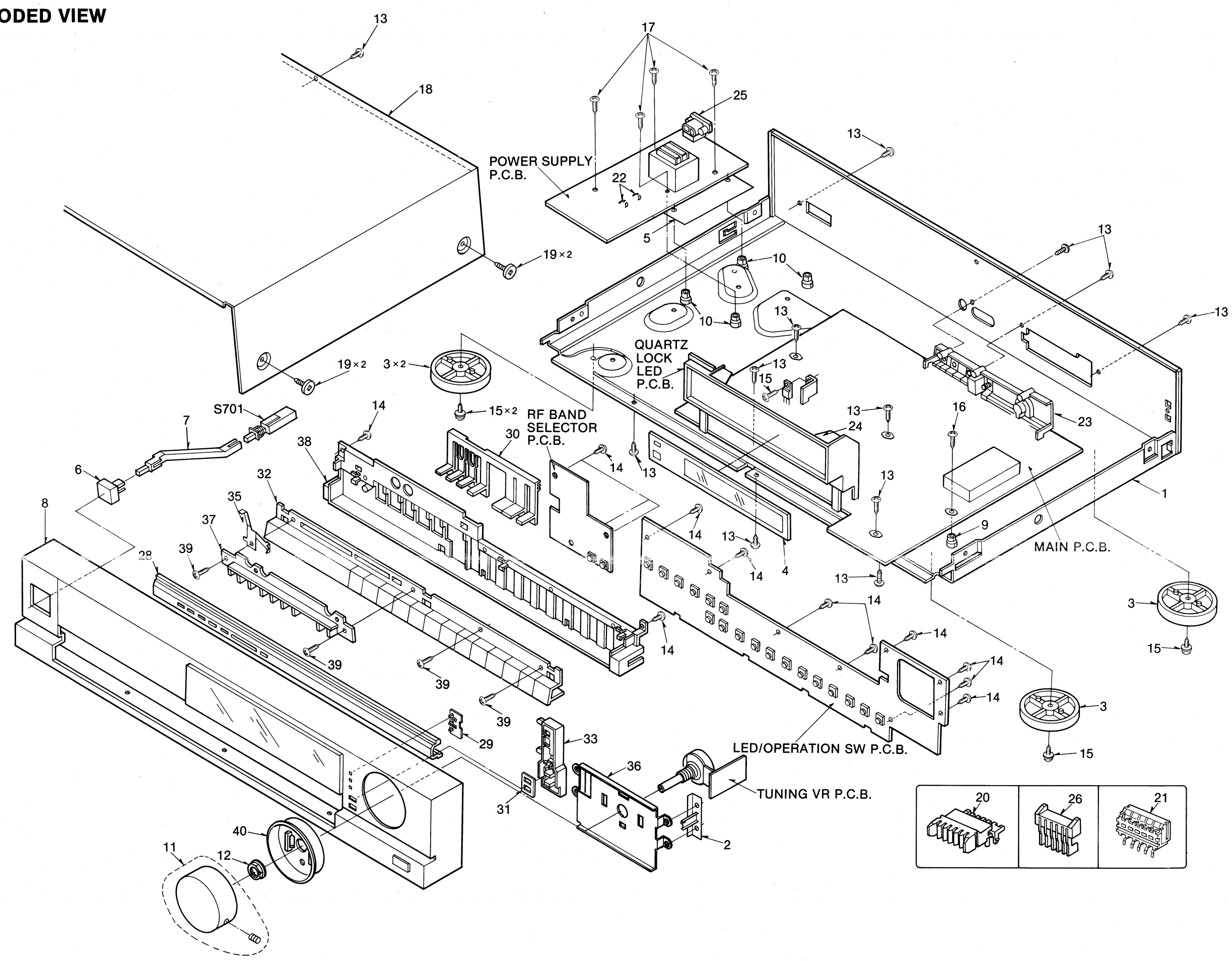
A
B
C
D
E
F

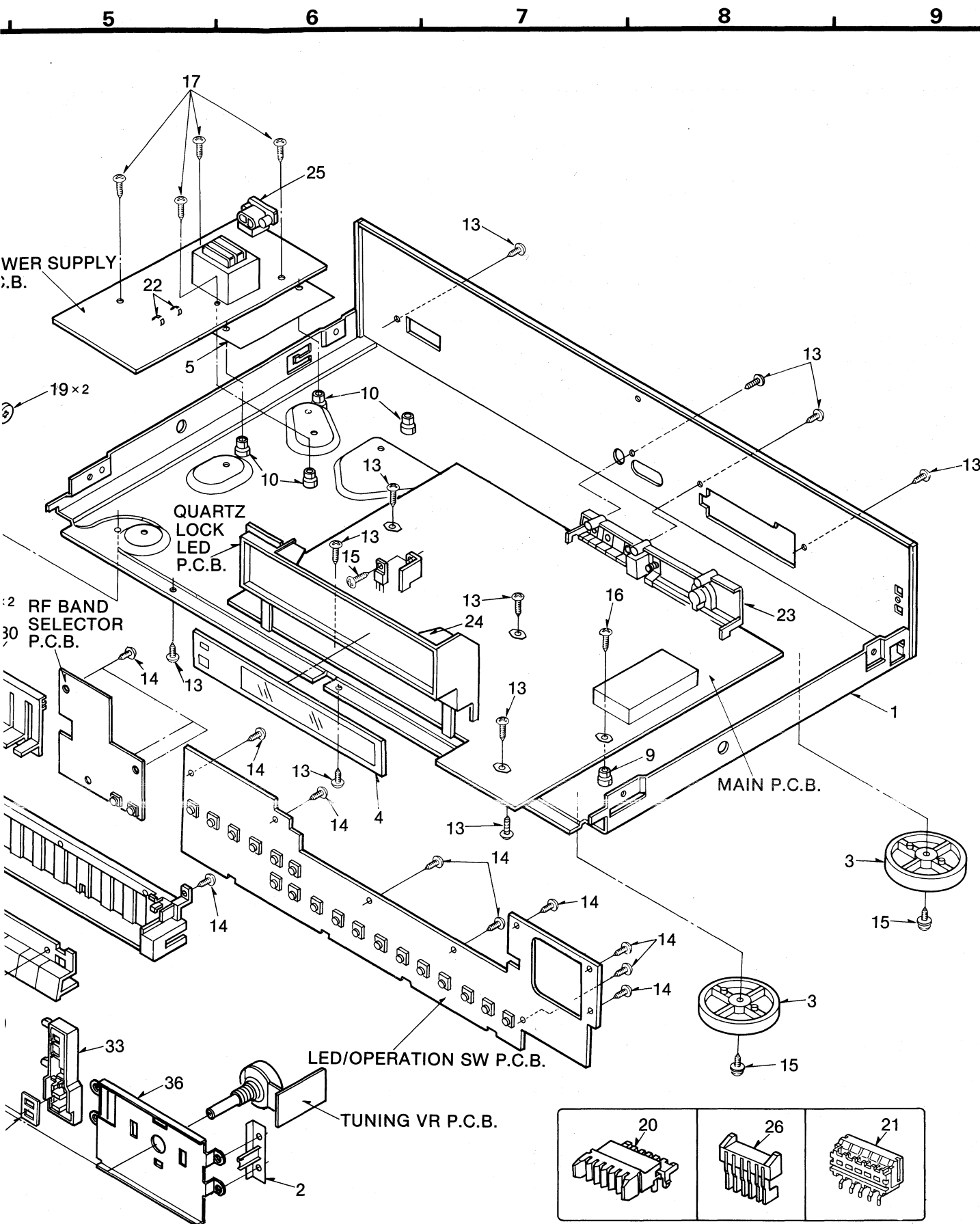
1 2 3 4 5 6 7 8 9

1G			
1a	S7		
1b			
1c	S15		
1d			
47			

2	23	24
N	N	N
P	P	P
6	47	
2	N	
2	P	

1G	
-	
-	
-	
-	
-	
-	
1d	
1e	
1c	
1g	
1f	
1b	
1a	
-	





REPLACEMENT PARTS LIST

Notes : * Important safety notice :

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CABINET AND CHASSIS					
1	SGPTG70L-KE	REAR PANEL	18	SKCD511SW1	CABINET
(EW)			19	SNE2129-1	SCREW
1	SGPTG70L-KF	REAR PANEL	19	SNE2129	SCREW
(EB, EF)			20	SJS50780WL	CONNECTOR(7P)
1	SGPTG70L-KK	REAR PANEL	20	SJS50880WL	CONNECTOR(8P)
(EK)			21	SJT30340LX-V	CONNECTOR(3P)
2	SUS1007	COIL SPRING	22	SJT390	FUSE HOLDER
3	SKL306	INSULATOR	23	SJF8615NP	TERMINAL BOARD
4	SDU332-1B	FL FILTER	24	SGX7924	ORNAMENT
4	SDU332-2B	FILTER	25	Δ SJS9236	AC INLET
5	SMX1001	SHIELD COVER	26	SJT30747WL	CONNECTOR(7P)
6	SBC666-5	BUTTON	26	SJT30847WL	CONNECTOR(8P)
6	SBC666	BUTTON, POWER	28	SGW610T03A	ORNAMENT
7	SUB183	ROD	28	SGW610S99A	ORNAMENT
8	SGWTG70L-KE	FRONT PANEL	29	SGL256	INDICATOR
8	SGWTG70L-SE	FRONT PANEL	30	SBC959-2	BUTTON
9	SHE185-1	SPACER	30	SBC959-3	BUTTON
10	SHE187-2	HOLDER	31	SHS6148	SPACER
11	SBN1237	KNOB	32	SBC1021A	ORNAMENT
11	SBN1237-1	KNOB	32	SBC1021-1A	ORNAMENT
12	SNE4021	NUT	33	SBC1022	BUTTON
13	XTBS3+8JFZ1	SCREW	33	SBC1022-1	BUTTON
14	XTB3+8G	SCREW	35	SUS870	SPRING
15	XTW3+8T	SCREW	36	SUW3113	HOLDER
16	XTBS3+16F1	SCREW	37	SHR9844	PLASTIC SPACER
17	XTBS3+20F1	SCREW	38	SGX7925-1	BRACKET
18	Δ SKCD511KE1	CABINET	38	SGX7925-2	BRACKET
			39	XTB3+10G	SCREW
			40	SGX7975	ORNAMENT
			40	SGX7975-1	ORNAMENT

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
PACKING MATERIAL					
P1	Δ SPG6253	CARTON BOX	P4	Δ XZB45X60A01	PROTECTION BAG
(EW, EK, EB)			P5	XZB23X20C03	PROTECTION BAG
P1	Δ SPG6254	CARTON BOX	ACCESSORIES		
(EF)			A1	Δ SFDAC05E03	POWER CORD
P1	Δ SPG6274	CARTON BOX	A1	Δ SFDAC05G02	POWER CORD
(EW, EK, EB)			A2	SQF13199	INSTRUCTION MANUAL
P1	Δ SPG6275	CARTON BOX	A3	SJP2249-1	OUTPUT CORD
(EF)			A4	SSA270M	FM ANTENNA
P2	SPSD69-2	PAD	A5	Δ SJP9009	PLUG
P3	SPSD70-2	PAD	(EK)		
P4	Δ SPP735	PROTECTION COVER	A6	SPB1162T	AM LOOP ANTENNA